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AMERICAN VETERINARY REVIEW

EDITED AND PUBLISHED BY

Prof. A. LIAUTARD, M.D., V.M.,

*Foreign Corresponding Member of the Central Society of Veterinary Medicine (Paris),
Honorary Fellow of the Royal College of Veterinary Surgeons (England).*

WITH THE ASSISTANCE OF

Prof. O. SCHWARTZKOPFF, V.M. of the University of Minnesota (Veter. Dept.).

Prof. WM. ZUILL, M.D., D.V.S. of the University of Pennsylvania (Veter. Dept.).

W. H. HOSKINS, D.V.S., Secretary United States Vet. Med. Association.

W. L. WILLIAMS, V.S., and other Veterinarians.

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AMERICAN VETERINARY REVIEW,

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EDITORIAL.

TO OUR READERS.—It is with regret that we open our new volume without a word to our friends—as has been our habit for years past—in a few pages of editorial—this time sickness has prevented us from wishing welcome to our subscribers, to our kind contributors and our hard-working assistant editors—we hope to be able to resume our labors soon, and to do justice to all who have so far given us their assistance, but we feel that, waiting for this opportunity, we were in duty bound to offer our thanks for past favors, and our hopes for a continuation of their efforts in our behalf. The changes we have inaugurated in this number, will no doubt indicate the full appreciation of the editor for the kind support that the REVIEW has received at the hands of American veterinarians.

ORIGINAL ARTICLES.

A CLINICAL STUDY OF ODONTOMES.

BY. W. L. WILLIAMS, V.S., Bloomington, Ill.

(A Paper read at the Annual Meeting of the Iowa State Veterinary Medical Association).

In Vol. XI. of the *Journal of Comparative Medicine and Surgery*, J. Bland Sutton, F.R.C.S. contributes a paper on "Odontomes," which for clearness and ability is probably the most valuable article in English veterinary literature on this much neglected subject, and I shall pre-suppose that each of you has given his contribution the careful study it so richly deserves.

Dr. Sutton defines odontomes as "*neoplasms composed of dental tissues, in varying proportions and different degrees of development, arising from tooth-germs, or teeth still in the process of growth.*"

He notes that three distinct parts are concerned in the formation of the teeth,—the enamel organ, the dentine papilla and the tooth-follicle; and uses these parts as his basis for classification and arranges odontomes in the following order:

A. Aberrations of the Enamel Organ.

Epithelial Odontomes.

B. Aberrations of the Follicle.

1. *Follicular Cysts.*
 2. *Fibrous Odontomes.*
 3. *Cementomata.*
 4. *Compound Follicular Odontomes.*
- C. Aberrations of the Papilla.
Radicular Odontomes.
- D. Aberrations of the Whole Tooth-Germ.
Composite Odontomes.

Were the subject well studied, we would doubtless find representatives of each class and sub-class in most of our domestic animals, especially in the horse, which seems far more prone to odontomes than our other patients.

My observations have been confined wholly to the horse, and under the demands of every-day practice my means for the study of odontomes have not been in proportion to the material offered.

I have, however, had the good fortune to observe cases in each class and sub-class as outlined by Dr. Sutton, with the exception of *fibrous odontomes* and possibly also *epithelial odontomes*.

In studying Dr. Sutton's paper it will be observed that odontomes are very rare, in man and animals, in the incisor and canine teeth. It must be further remembered that the very slight development or total want in the horse, of the canines, makes aberrations in their growth very improbable indeed, and we thus have the molars as the only probable seat of odontomic aberrations, although a few exceptions to this rule occur.

Bearing in mind the very complex character of the molars of the horse, in the intricate arrangement of the various tooth substances—presenting, as they do, an intermediary stage of development between the compound teeth of the elephant or mastodon and the single tooth of most smaller lower animals and of man—it will be readily understood that the *epithelial odontomes* of Dr. Sutton are not likely to occur in the same distinct form in the horse as is seen in the simple teeth of man, where the entire crown of the tooth is covered with pure enamel.

In Fig. 1. we have, however, many of the characteristics of

this form of odontome, which—as we will note later—seems to have consisted primarily of an aberration of the enamel organ.

As is apparently the case in man, so in the horse, it is found that a large proportion of odontomes belong to the second class of Dr. Sutton—Aberrations of the Follicle.

Under this, the first sub-class, or *Follicular Cysts*, forms quite a large proportion of the total number of odontomes, and are frequently met with in practice, but consisting only of a delicate sac, filled with serum, no illustration by specimen is practicable.

The second sub-class, *Fibrous Odontomes*, I have not observed. This is probably due to the fact that, as appears to be the case in man, this aberration of development occurs for the most part in patients affected with rickets, a disease which has not been closely studied in the horse.

The third sub-class, *Cementomata*, is well illustrated by Figs. 4 and 5, which show large tumors of cementum.

The fourth sub-class is not so well represented in my collection, owing to carelessness in preserving specimens, for this form of odontome is quite common in practice and constitutes probably the most serious of all forms to the health of the animal. It is very well illustrated, however, in Figs. 6 and 7.

Under Class C, Aberrations of the Papilla, we find but one sub-class, *Radicular Odontomes*, which we find nicely illustrated in Figs. 8, 9, 10, 11, 12 and 13.

In class D we again find but one sub-class, *Composite Odontomes*, which is well illustrated in Fig. 14.

Although these classes and sub-classes may pass one into another by imperceptible gradations, yet the classification is of great importance and may prove in many instance of value as a guide to the veterinarian, by affording an intelligent basis for action.

Supposing that each of you has given Dr. Sutton's valuable paper the careful study it so richly deserves, and fully understand his classification as outlined above, we will now attempt to resume the subject at the point where he dropped it, and using this for a basis, and our clinical experience as

a frame-work, attempt to learn something of direct practical value to the veterinary practitioner regarding odontomes as seen in the horse.

In our experience in a horse-breeding district we find that a very large majority, we will venture to say fully 75 per cent, of the serious dental affections are due directly to aberrations of the tooth gum.

This proportion will probably not hold good in all sections of the country, and certainly not in large cities, for the most evident reason that these aberrations of the tooth gum naturally occur for the most part during the early stages of dental development and would consequently be seen far more often among young animals on the breeding farm, than among the mature work animals of large cities.

The editor of the *Journal of Comparative Medicine and Veterinary Archives*, in a foot-note to Dr. Sutton's paper, states that odontomes in the horse occur most frequently from the fifth to the seventh year, which differs widely from our experience, nearly all of our cases occurring in animals from six months to three years old.

Many of them failed to be presented for treatment at so early an age, but they usually had a very trustworthy history, dating back to the second or third year as the beginning of the disease.

We recall but one case, that of Chester B., Figs. 8, 9 and 10, in which the history, if at all obtainable, did not clearly indicate an early origin of the disease.

As a rule, the younger the patient, the more rapid and threatening the growth of the odontome.

We have met with no cases of odontomes of the canines, and so far as can now be remembered none of the temporary molars, but one of the incisors, all others being confined to the permanent pre-molars and to the molars.

The superior molars apparently suffer more often than the inferior, in the proportion of about four or five of the former to one of the latter. This apparent difference in susceptibility may not be true, since in many cases inferior odontomes frequently pursue a more benign course, and not inter-

fering with respiration, nor producing the dreaded nasal discharge, are neglected by the owner and the animal is not brought under the observation of the veterinarian.

While in many of the odontomes of the lower jaw the course is likely to be very benign, yet we have observed several fatalities from them, whereas we have seen none from those of the upper jaw, and in this respect our observations correspond exactly with those of Dr. Sutton, who records no fatalities in odontomes of superior teeth, but several from inferior odontomes.

The symptoms of odontomic changes in teeth necessarily vary greatly with the class, the tooth affected, size of odontome, stage of development, etc., etc.

In the lower jaw, where they usually take the form of radicular or compound follicular odontomes, the first noticeable symptom usually consists of a hard, sometimes painless; at other times quite sensitive, swelling, varying in size, well defined, and seen mostly toward the lower border of jaw where it is not covered by muscle. It may bulge mainly on either the outer or inner side, but is generally central, showing equally on both sides.

The growth may be quite gradual and the tumor painless unless suppuration supervene, to which there is usually a strong tendency, when the growth becomes more rapid and the tumor painful. The tooth may now also become sensitive, the animal evincing pain when the crown is manipulated, and especially in mastication. Two natural modes of relief present themselves, either or both of which may be called into operation. The more direct and effectual is by the pus forcing an exit through the thin, bony plate of the maxilla, at or near the affected fang, frequently on the external, more often on the internal side. The actual character of the disease is now readily recognizable by passing a metallic probe through the fistula, until it comes in contact with the hard, rough surface of the diseased tooth tissue. The swelling may then subside, and the animal remain apparently well except the small fistula, which usually remains constantly open, and from which a small quantity of thick, fetid pus

slowly exudes and may so continue for several years, the crown of the tooth presenting no marked abnormality.

The second, and less effectual mode of relief, consists of the burrowing of the pus up along the side of the tooth, in one of the lateral grooves, finally finding exit into the mouth. This may afford some relief, but usually only of a temporary character, as it opens up a new source of danger by permitting food, during mastication, to pass down along the tooth into the alveolus and the original pus cavity, where, fermenting and decaying, it acts as a very dangerous irritant, resulting in an increase in the size of the opening about the tooth and a very rapid and serious increase in the size of the pus cavity which may now attain a capacity of one to two pints, with bony walls one inch or more thick, the cavity lined usually with a smooth pyogenic membrane, and filled with irregular masses of detached dental tissue, sometimes pieces of detached bone, and nearly always a large quantity of pus, mixed with decaying food; presenting altogether the most repulsive, fetid mass possible.

In this stage, marked signs of serious constitutional disturbance rapidly supervene, the coat is staring, the animal feverish, extremely debilitated and emaciated, the mouth very offensive, and unless promptly relieved by surgical interference, will probably end in the death of the animal. We remember well two fatalities of this kind; both in the inferior maxilla of high-grade, two-year-old draft fillies, and both were lost through an error in diagnosis by the attending veterinarian.

The cases not coming under our care we failed to observe the animals either immediately prior or subsequent to death, so that the immediate cause of death can not be stated. Dr. Sutton, in his paper previously quoted, suggests septic pneumonia, from, we would infer, inhalation of pus, as the probable cause of death; but, as previously noted, all his fatalities, as well as ours, occurred in cases where the lower jaw was affected, when we should naturally expect that suppurating odontomes of the upper jaw, with escape of septic matter into the nasal passages, would be more likely to be followed by death from septic pneumonia.

It seems more likely that the want of a depending exit for the pus in the lower jaw in these cases permits the contents of the cavity to become far more virulent than in the upper jaw, and finally escaping into the mouth, causes septic infection, rather by ingestion, or absorption through wounds of the affected parts, than by inhalation.

Odontomes in connection with the superior molars are more common than with the inferior, and present a greater variety in character and symptoms.

In very young animals, follicular cysts and composite odontomes predominate.

Small follicular cysts are quite common in connection with the superior permanent pre-molars in colts aged one to three years. They appear, unless complicated by suppuration, as sharply defined, painless, hemispherical bony eminences, over the fang of the affected tooth. They are usually slow in growth, attaining their maximum size in from two to four months, when they may remain stationary for some months, and then imperceptibly recede ; especially if the shedding of the temporary crown, or its surgical removal, lessen the resistance to the eruption of the permanent crown.

If this resistance is not promptly removed the tumor may remain stationary, although the tooth may erupt later, for several years ; but usually, unless suppuration or other complications supervene, when the animal reaches adult age, the enlargement slowly recedes and finally disappears.

Follicular cysts of the third pre-molar, and all the molars, may, instead of causing a marked swelling of the facial region, develop and extend into the sinuses of the face, and, continuing their growth, either extend through the foramen of communication between the sinuses and nasal passages, into the latter, or, by pressing the internal wall of the sinus inwards, narrow or occlude the nasal passages, and thus produce well marked dyspnœa. The cyst, on exploration, is usually found to have a thin, tough, fibrous wall, containing a thin, reddish or reddish-yellow fluid. Unlike in cases of the filling of the sinuses with pus, these cysts do not destroy their resonance on percussion so that in some cases the affected side can only

be determined by alternately closing each nostril, or by exploring the sinuses with a gimlet. In other cases, the contents may be thicker, of a gelatinoid consistency, and the color may vary from pale yellow to reddish-brown. If neglected, they may suppurate.

Multilocular cysts, compound follicular cysts, radicular and composite odontomes are all prone to early suppuration.

The first evidence of their existence in the pre-molars, and first and second molars, is usually more or less bulging of the facial bones over the affected part, but the position of the last molar is such that no external swelling can well occur. Then follows, in case of considerable cystic growth, dyspnoea, without marked dullness by percussion over the affected part. Suppuration usually supervenes early and in the anterior molars, whose fangs lie in contact with the external bony wall, may find exit externally, leaving a permanent fistulous opening, through which the hard, rough tooth may readily be recognized with a silver probe.

Frequently also, the pus finds exit alongside the affected tooth into the mouth. This separation between the tooth and gums can be readily felt by the fingers in many cases.

At the same time there is a further natural tendency to recovery from the disease, by the splitting up, loosening, and dropping out, of the tooth, followed by a free exit of detached denticles, pus, debris, etc., which may, and doubtless is sometimes followed by tardy and fairly complete recovery.

More often however, this splitting up of the tooth only adds to the gravity of the case. In this splitting process it is quite likely that food, or detached pieces of tooth, will become so impacted as to force a part of the tooth out of its line, where, with its rough, jagged edges, it causes serious laceration of the lips or tongue, or by the irritating presence of the detached pieces, may cause more or less extensive ulceration and destruction to the bony palate, thus establishing a permanent oro-nasal communication, through which food will be pushed into the nasal cavities during mastication, as in Fig. 16.

Another untoward result sometimes brought about through the longitudinal splitting of mal-developed teeth is

well illustrated by a case occurring in our practice of a four year mare in which there was an aberration in the development in the fourth superior molar, resulting in the splitting of the tooth in two halves, the inner half remaining in situ, while the outer was pressed upwards and inwards by the gradual impaction of food, until the fang of the detached half rested in the nasal passage, against the septum nasi, while the crown rested against the fang of the persistent inner half.

Usually, however, the pus from odontomes finds exit either into the facial sinuses or directly into the nasal passages, giving rise to various-colored fetid nasal discharges.

If the discharge take place directly into the nasal passage, dyspnœa rarely occurs, but when into the sinuses and they become filled with dry, inspissated pus, which may press their internal walls inwardly, encroaching on the nasal passage, marked dyspnœa soon becomes evident. When this filling of sinuses becomes so great as to press their internal walls over completely against the septum, so as to effectually stop any overflow of pus from the sinuses through the foramen into the nasal passages, as is sometimes the case, the dyspnœa becomes at once urgent and serious, as the further accumulation of pus may push the septum nasi over well against the outer wall of the opposite nostril.

In other cases again it may happen that in addition to pus, detached, irregular, sharp masses of denticles, like those in Fig. 7, may pass into the nostril and slowly gravitate downwards, consuming days, perhaps weeks, in gaining an exit, irritating and lacerating the nasal membrane, causing extensive ulcerations, which when healed, leave irregular, large white cicatrices which can be very readily mistaken for glanders, especially when accompanied by an abundant fetid discharge and considerable tumefaction of the sub-maxillary lymphatics.

In a large proportion of cases of suppurating odontomes, there is a well-marked, hard, sometimes nodular and painful tumefaction of the submaxillary glands.

Suppurating odontomes of the sixth, perhaps also of the fifth molar, when the exit of pus chances to occur inwardly,

can only be surmised by the fetor of the breath and nasal discharge. The causes which lead to suppuration of odontomes are probably various, but may as a rule be referred to one of two conditions. First, when accompanied by considerable cystic formation, the rupture of the cyst will almost inevitably lead to suppuration.

The second and undoubtedly more fertile and serious cause of suppuration lies in the imperfect development of the tooth crown, by which there is an open communication extending from the crown up through the central portion of the tooth, between the inverted layers of enamel up to the fang, and into the mal-developed tooth follicle, through which food and other adventitious matter may readily pass and incite the suppurative process. By many these openings are regarded as the result of caries of the tooth, but a closer examination of a series of cases will develop the fact that essential caries of the molars of horses is *very* rare, and that this defect is primarily in the tooth germ, and that the inverted layer of enamel is not continuous at the bottom, but open, and that the cementous which should bind the enamel together throughout the length of the tooth is wanting, leave a free opening to the tooth germ. This is well illustrated in Fig. 1*b*, where the fifth molar, as is shown by the wire passing through its center, is traversed from crown to follicle by an opening which was ready formed before erupting. In the same Fig. 1*a* is shown the recently erupted fourth molar in the same condition. This same state is also well shown in Figs. 2, 3, and 6, and to a still greater extent, resulting in the longitudinal splitting of the tooth in Fig. 12 and 15, the series serving well to demonstrate that the opening is primary and if caries be found present, it is secondary.

The treatment of odontomes can probably be best outlined by a series of cases occurring in practice and representing fairly well the various classes into which they have been divided.

As previously noted, the first class aberrations of the enamel organ is most nearly represented by Fig. 1.

The animal was an unusually large, vigorous, high grade

draft gelding, brought to us for operation when about twenty-six months old, the owner relating that some six months previously the colt had suffered from "distemper" (strangles) from which he had failed to fully recover, but rather growing worse, the owner concluded to seek assistance. The general health, condition and appetite of the animal seemed perfect, and no difficulty could be observed in his eating. There was great dyspnœa, and an enormous bulging of the left side of the face, extending entirely over the region occupied by the facial sinuses, from the eye to the region of the second pre-molar, from the median line of the head to the masseter muscle, the bulging reaching at its central part an elevation of fully three inches beyond the natural facial line. The swollen part was somewhat painful, and dull on percussion; the sub-maxillary lymphatics of the affected side were considerably tumefied.

The nasal discharge present was only such as would result from the extreme dyspnœa. Accepting the owner's history of prior strangles, and diagnosing suppuration of the sinuses as a result, a free opening was made into the lower part of the frontal sinus, when a large amount, probably two pints, of fetid greenish serous fluid, mixed with pus, escaped, and the sinus was dressed antiseptically for two or three days, when, although the dyspnœa had to some extent subsided, the improvement was unsatisfactory. The pressure of pus and fluid had destroyed the inter-sinusal walls, converting all into one, and extending them beyond their usual boundaries.

With a view to perfecting the drainage, the opening into the frontal sinus was widened and then extended downwards toward the nose some four inches, until the antero-inferior limit of the pus-containing cavity had been reached. This large opening, parallel to the septum nasi, afforded a good opportunity for examining every part of the frontal sinns, and especially with regard to the failure of the pus to gain exit through the nasal passage. It was found that at the point of communication between the nasal passage and the sinuses, the walls between the two had been pushed over by the contents of the sinuses until they were pressed firmly against the septum nasi, completely stopping any overflow into the nostrils.

Knowing full well by experience the invaluable advantage in diseases of the sinuses to be derived from a *free, dependent nasal* exit for morbid products, one finger was passed through the foramen of communication between sinuses and nasal cavities and then forced down between the septum nasi and the displaced internal wall of sinuses. A probe-pointed bistoury was then passed along the finger and the displaced wall divided as low down toward the nostril as practicable. The bistoury then turned and including a piece of the wall about three-quarters of an inch wide, the incision was carried back in a parallel line to the starting-point, thus detaching and removing enough of the wall to ensure a free opening, which was made more effectual by pressing a good sized antiseptic cotton tampon between the septum nasi and the edge of the incised wall at its lowest part. This tampon was removed daily for two or three days.

This, however, failed to drain the maxillary sinus at its inferior part, and accordingly a second opening was made over the fang of the first molar (fourth tooth) at the zygomatic ridge, and on cutting through the maxillary bone, instead of finding a considerable intervening sinus, we came directly upon a mass of dental tissue and the real nature of the affection was now revealed, and upon questioning the owner regarding his history of strangles it was found that it was without other foundation than purulent discharge from the nostril of the affected side and some degree of dyspnœa.

The opening through the maxillary bone was enlarged and the odontome well bared, a steel punch placed against it at right angles, when a few sharp blows with a mallet shattered the tumor, which was now found to consist of several cysts with walls of dental tissue.

Some of the cysts were three-quarters of an inch in diameter and contained a reddish-brown semi-transparent fluid. Portions of these cyst walls are shown in Fig. 1 *c, d, e* and *f*, and are composed apparently of dentine and enamel.

After the tumor had been well comminuted and the pieces well removed, leaving only about one-and-one-half inches of the crown, the latter was driven into the mouth by means of punch and mallet and removed.

This fourth tooth out of the way, it was seen that the fifth was similarly affected, and its fang was comminuted in the same manner, until proper opportunity was given to apply the punch at an angle which would permit our driving it into the mouth as with the fourth.

Examination of the teeth (Fig, 1. *a* and *b*) shows quite clearly that the original departure from health was in the development of the tooth follicle itself, by which an opening was left at the bottom of the central inversion of enamel and the secretion of cementum to bind the two inverted layers together is wholly wanting. In these teeth, especially in the unerupted fifth, no evidence of caries is present, but the inverted layers of enamel are bare and the space between them wholly devoid of cementum. Figs. 2, 3, 6, 12 and 15 only serve to emphasize the fact that caries as a primary affection of the molars of the horse, is *very rare*, while aberrations in the tooth follicle, resulting in a want of continuity of the inverted fold of enamel, and a want of cementum between the enamel plates, is common, and leads to early suppuration, later to caries and longitudinal splitting of the tooth, and not, as Hinebaugh states (Veterinary Dental Surgery, p. 78). "Caries commencing" "at the crown or table, is due to a portion of the dentine losing its vitality" for, as he shows very conclusively in the same vol., (p, 73, Figs. 18, 19, and 20,) the openings in the crowns are *not in a part where dentine exists*, but between the inverted plates of enamel where cementum has failed to form.

After the removal of these teeth, the sinuses were thoroughly washed with a four per cent solution of carbolic acid, after which the sinus and alveoli were well filled with pledgets of cotton batting, saturated with carbolized oil (1:16) with the surface thickly sprinkled with iodoform. This dressing was renewed daily, the dyspnoea rapidly disappeared, healthy granulations promptly appeared in every part, the bulging of the face receded, the openings in frontal and maxillary bones and in alveoli gradually closed, so that within a fortnight after the removal of the teeth, the animal left the infirmary, and continued to improve rapidly, making a good recovery, with but slight blemish, in about twelve weeks.

Following the classification of Dr. Sutton. under class B we have, first; Follicular Cysts, of which in practice we meet with two common varieties.

One of these, the more common, and forming a connecting link between the preceding class and the true follicular cysts, are the small follicular cysts in connection with the permanent pre-molars, causing well-defined hemispherical tumors of the superior maxillary bone over or slightly above the normal position of the tooth-fangs. They are observed generally, if not always, in animals from several months to two years old.

Unless suppuration supervene there is little call for treatment, except on account of the blemish, which can in many cases be modified largely by prompt removal of the deciduous crown, if still wished, in order to remove the resistance to eruption of the permanent tooth. Further modification of the blemish can only be effected by sacrificing the tooth and cutting away a part or all of the enlargement. In many cases, owing to aberrations in the formation of the tooth, as I have already noted above, resulting in a communication between the crown and fang, existing at time of eruption between the folds of involuted enamel, leads to suppuration of the cyst, which may find exit externally through the maxillary bone, or internally, alongside the tooth into the mouth, or into the nostril.

Figs. 2 and 3 represent suppurating follicular cystic odontomes of the second pre-molars of this class, from two-year-old colts.

Suppuration of the cyst entails the destruction of the tooth in these cases, and it should be removed promptly and care taken to reduce the blemish to a minimum by removing at some time the greater part of the protruding maxillary bone. Of all odontomes these yield the most promptly and satisfactorily to treatment.

The other variety of follicular cysts, and in fact the typical ones, occur in relation to the molars, and extend into the nasal sinuses and passages in the form of thin-walled bladder-like cysts, and occur, so far as we have observed, in colts from a few months to a year and a half old.

The contents of the cysts vary from a thin limpid fluid to a gelatinoid mass and in color from light, pale yellow or red to a deep reddish-brown. They should be treated promptly, by a free depending opening, and after the contents of the cyst have escaped, the walls should be carefully removed, and if the fang of the tooth is not exposed, it should be left undisturbed, and after-treatment carried out as indicated above.

Cementoma, when confined to the crown, as in Fig. 5, merely calls for extraction in the ordinary manner.

The case represented in Fig. 4, however, offers some difficulties. The patient was a four-year-old mare, affected since her second year, and the tooth, the third superior pre-molar, was removed by means of heavy forceps, but the animal failing to recover, she was brought to us for treatment, when we trephined into the alveolar cavity and removed a large amount of detached cementum, carious bone, decaying food, etc., and discovered that in drawing the tooth, the bony plate had been badly damaged, leaving a large hole in it, as in Fig. 16, which failed to heal, and through which food escaped into the nostril during mastication, rendering the animal quite offensive and well nigh worthless.

The last or fourth sub-class under Class C, that of Compound Follicular Odontomes, is through neglect, only incompletely illustrated in my collection by Figs. 6 and 7: the first representing the body of the tooth, the second irregular masses of dentine, enamel and cementum, detached through suppuration or found attached to the walls of the abscess.

The patient was a well developed high grade draft mare, aged four years, affected since about two years old. She showed at date of presentation for operation, an enormous enlargement of the left inferior maxilla over the region of the fourth molar, with an external fistula through which a fetid pus escaped.

Over the region of the opposing fourth superior molar another swelling of great size was present, while from the nostril there was a free escape of a fetid, purulent discharge.

The entire number of both superior and inferior molars of

the left side—owing doubtless to pain induced by pressure on the two affected molars, and consequent mastication of food on the right side only—had become worn wedge-shaped, so that the superior passed down outside of the inferior teeth, the two rows closing together like shears, the beveled sides coming in contact instead of the tables. Beyond this deformity, which was uniform with all the left teeth, no abnormality could be detected by an oral examination, and hence no means were so offered distinguishing the diseased from the healthy teeth.

Free openings were made over the region of both the fourth inferior and superior left molars, and the affected teeth, which were now plainly recognizable by the touch, were driven out with punch and mallet, the accumulated pus and detached dental tissue were carefully removed, the pus-cavities thoroughly cleansed and dressed antiseptically. The recovery from the operation on the inferior maxilla was prompt and complete, while that of the superior was tardy, the alveolus having been seriously injured in driving through it the greatly enlarged irregular fang of the affected tooth (Fig. 6) which left an opening requiring several months for healing.

The deformity of the remaining teeth was so great that it could not be overcome, but the recovery was sufficiently complete that the mare has since maintained good health and flesh while doing ordinary farm work and breeding, while the external blemish is quite insignificant.

Under class C, Aberrations of the Papilla, the only subclass, Radicular Odontomes, is well illustrated in Figs 8, 9, 10, 12 and 13, three of which offer something of special interest.

Fig. 13a represents the fourth superior molar from an aged pony whose history could not be traced, but had doubtless had a fistulous opening over the tooth-fang for several years. Not fully realizing the extent of the disease, a free opening was made to the bottom of the fistula, and the rough, carious portions as carefully removed as possible; but this proved of no avail and later the tooth was extracted by trephining and

punching, after which the opening left failed to heal, leaving a permanent fistula from the face to the mouth, through which food was forced during mastication. The age of the animal, debility from bad care, and imperfect after-treatment by the owner were probably to some extent responsible for the bad result, but doubtless the main factor is to be found in the excessive enlargement of the fang; tearing in its forced extraction, entirely too large an opening through the alveolus.

(To be continued.)

ON THE HORSE'S EYE.

By Dr. CLAUDE D. MORRIS, Bath, N. Y.

(A Paper read before the New York State Veterinary Society).

The diseases of the eye that are met with in ordinary practice arise either from dietetic influences, such as improper food, or a too great allowance of good food, poor ventilation, overwork, dark stables, and injuries occasioned in various ways.

The symptoms which are manifest by improper food and care, are first, a dullness of the transparent structures, and a slight congested condition of the conjunctiva. The temperature of the body will be slightly elevated, and occasionally the bowels will be constipated. Urine of a thin, milky color. These cases are simple and easily controlled. I find that a moderate dose of physic, such as castor oil, from twelve to sixteen ounces, according to the size of the animal, will act freely enough. The subsequent treatment consists of careful feeding, together with a weak solution of boracic acid dropped in the eyes twice each day for three or four days. Injuries which are frequent, I find best treated as a whole by the use of cold, soothing applications, allowing the animal sufficient rest. If the eye or any of the appendages are cut and lacerated, detach all semi-attached portions, stitching up all parts where the incision will admit of bringing the divided edges together, applying a sponge saturated in ice water,

frequently changed. I have had a number of cases under my care that cannot be classed under the head of staphylomatis conditions. Yet to the casual observer they might appear as such enlargements on the cornea. They seem to partake more of the nature of granular oma or fibroma, arising from some constitutional disturbance. They are best treated (if the circumstances will warrant) by excision, but more particularly with caustics followed by a moderate solution of zinc sulphate and belladonna. The symptoms in all these cases that are first noticeable by the care-tender, is that the animal keeps the eye closed a portion of the time, tears also flowing over the cheek, and upon examination, he invariably says that the animal has a piece of chaff in its eye.

Hyperæmia of the iris is of far more frequent occurrence than is generally supposed. Nor can we be surprised at this, when we remember the close connection which exists between the iris and the cornea, on one hand, and the iris ciliary body and choroid, on the other. Indeed, we may regard the iris as the anterior termination of the ciliary body and choroid, the whole forming in reality one tissue, the uveal tract. Hence the frequency with which inflammation of the iris extends to the ciliary body and choroid, and vice versa. In a hyperæmic condition of the iris, we find that there is more or less marked subconjunctival injection; that the pupil is somewhat contracted and sluggish, not reacting freely on the application of atropine, and that the iris is discolored, which is due to the increased vascularity imparting a reddish tint to the natural color of the iris. In iritis there are superadded to the symptoms of hyperæmia of the iris those of an effusive or plastic lymph at the edge of the pupil, or on the surface and into the stroma of the iris.

Amongst the earliest symptoms of iritis are, injection, ciliary contraction, sluggishness of the pupil, and a discolored, dull appearance of the iris. But a far more constant symptom is the subconjunctival vascularity, giving rise to a more or less broad, rosy zone or parallel vessels, closely ranged round the cornea. This zone is generally of a bright rose color, and consists chiefly of small arterial twigs.

Amongst the causes of iritis, a very frequent one is exposure to sudden changes of temperature, cold draughts of air, rain, wind, etc.

Iritis is also of traumatic origin, being caused by mechanical or chemical injuries, which either affect the iris directly or secondarily. These foreign bodies may remain lodged for some time in the conjunctiva cornea anterior chamber, or in the deep tissues of the eye, and then set up iritis.

A favorable or unfavorable termination of iritis depends largely upon the severity and the cause of the inflammation. If the patient can be seen in the early stage of the disease, before any adhesions have taken place between the edge of the pupil and the capsule of the lens, or while these are yet so slight and brittle as to be readily broken down by the energetic use of atropine, then the result may be looked upon as favorable. The treatment consists in carefully guarding against the injurious influences of bright light and sudden changes of temperature, as well as cold and wet. The end greatly to be desired in the treatment of iritis is to obtain wide dilatation of the pupil as soon as possible, and hence a strong solution of atropine should be, at once, energetically applied to the eye. The effect of atropine in these cases is three-fold. Wide dilatation of the pupil is produced, and the iris is, therefore, removed from the contact with the anterior capsule of the lens, so that no adhesions can be formed between them at the edge of the pupil, or on the posterior surface of the lens. Further rest will be afforded to the inflamed muscular tissue of the iris by a wide dilation of the pupil; also the tension of the eye will be diminished and the intra-ocular circulation relieved, which will diminish the state of congestion of the iris and ciliary body.

If by a too strong solution of atropine, or the eye becomes irritated by using a moderate solution, and granulations begin to form on the lids, accompanied by swelling of the conjunctiva, this is best overcome by using a solution of alum, zinc or nitrate of silver, gr. ii, H_2O \mathfrak{z} i, or should vesicles form, that condition can also be overcome by the use of borax, 10 grains to the ounce.

Ophthalmia, generally speaking, is a constitutional disease affecting the organ of vision, having its origin in the deep structures of the eye ; and, as it progresses, works externally, involving the entire organ. The varieties of this disease that are met with in veterinary practice, are catarrhal, purulent and periodic. Catarrhal ophthalmia is a sporadic disease, or, we may say, it is one of the manifestations accompanying a sporadic disease, arising from a variety of causes, such as alternations of temperature, ill-ventilated and dark stables, exposure to wet and cold, and, in a young animal, a strong predisposition to colds exists during the process of changing the coat. The symptoms that are present when the veterinarian's attention is called, are generally, debility, rough, staring coat, the temperature slightly elevated, a discharge from the nose and eyes, more or less opacity of all the transparent structures of the eye, and as the owner will frequently remark, the animal's eyes will seem to clear up and look bright, and then in two or three days will look hazy and dull again. The conjunctiva is more or less congested, and in the more aggravated cases we find on everting the eyelids that the conjunctiva will be red, vascular and swollen, so that the meibomian glands are nearly or entirely hidden. The discharge varies in quantity and quality according to the stage and intensity of the affection. In the early stages there is generally only an increased secretion of tears, but the discharge soon becomes more opaque and stringy, and of a yellowish-red tint, consisting chiefly of albumen and broken-down epithelial cells. The treatment must vary according to the severity of the disease.

If the eye is very irritable, and there is much lachrymation accompanied by conjunctival injection, astringents should be carefully avoided, as they tend to increase the irritability. Such cases should be treated with soothing applications (such as atropine and warm fomentations), and in the course of three or four days bathe the eyes with a moderate solution of boracic acid.

Purulent ophthalmia is a subsequent termination of catarrhal ophthalmia, if the former be not checked and is

allowed to run its course. The symptoms in this condition are but an aggregation of the former more pronounced. Lachrymation and intolerance to light increases, the lids become very swollen, so that the upper hangs down in a thick heavy fold. They are red, glistening, and œdematous, and if pressed upon are very tender. The conjunctiva becomes vascular and swollen, and patches of effused blood are noticed covering more or less of its surface. They often bleed freely on the slightest touch, as their epithelial covering is very thin and easily shed. As the disease advances the discharge increases in quantity, becomes more opaque, thick and creamy; and on account of its admixture with blood, frequently assumes a reddish-yellow tint. The chief danger in purulent ophthalmia is the implication of the cornea. Any cloudiness of the latter must necessarily be looked upon as an untoward symptom. Sometimes there is a serious infiltration into the cornea, which may remain confined to the periphery. If this opacity is considerable and extends over the center of the cornea, the sight may be greatly impaired. Generally the infiltration changes into an ulcer, which may, in favorable cases, remain superficial, and as such may leave very little or no opacity of the cornea. The greatest attention must be paid to local treatment. The eyes should be frequently cleansed of the discharge. A moderate solution of nitrate of silver or sulphate of zinc should be applied. Ice compressed may also be applied to the eyelids, as it will often cut short the attack. If the temperature of the lids is but moderately increased, it is only necessary to employ cold compresses for an hour or two after the application of caustics, for we thus assist the astringent action of the caustic upon the blood vessels, and also moderate the reaction produced by it. The after-treatment consists of a saturated solution of borax, alternated with sulphate of copper.

Periodic ophthalmia is the disease of the eyes in the lower animals that has baffled the skill of such men as Williams, Dick, Percivall and Coleman. And they lay it down in their works as one in which they do not feel justified in suggesting any line of treatment that will prove successful. They all agree

that the disease is a slow, remittent process, having its origin in the posterior structure of the eye, working anteriorly and terminating in cataract. I have seen but a few cases of this form of ophthalmia, and have not treated it to any extent. I have, however, palliated for a time the symptoms that attracted the owner, and he would return in two or three months and would say, "Give me some more of that eye medicine, and when I get his eyes cured this time I will dispose of him." The first noticeable symptoms are tears flowing over the cheek, and if the animal is in a bright light, there is always more or less blinking, indicating an utter intolerance to light. The cornea and lens are quite opaque, and if the case is one of some weeks, there will be a wrinkled or furrowed appearance of the upper lid and eyebrow. The attack generally comes on suddenly without any appreciable cause, and if in one eye, it seems smaller than its fellow and is drawn back into the orbit, as it were, as far as possible from the light which, from its sensitiveness, it cannot bear. Percivall, describing the opacity of the cornea and anterior chamber, says: "At the beginning the anterior chamber preserves its pellucidity so that the iris and pupil can be seen, the latter contracted, the former unchanged in color. In the course of two or three days, sometimes earlier, the chamber becomes obscure by a dingy white or amber-colored deposit floating within it, through which the pupil is hardly discernable. The opacity of the cornea proceeds from its circumference to its center, until at last the whole of the surface becomes of a dull greyish hue, and in some cases blood vessels are seen ramifying over it. When the dullness is great the iris is invisible, but when it can be seen, it will be found that the pupil is narrow and contracted."

Some writers are inclined to give preference to some one particular structure of the eye as the seat of the disease. Williams is of the opinion that it may be considered as involving the entire organ in its incipency. Williams describes the remaining symptoms as those of "turbidity of the aqueous humor, and the corpora nigra lose their jetty blackness. The pupil becomes more and more contracted, the conjunctiva intensely reddened, and in some cases the vessels crowd around the

margins of the cornea, across which numbers of them shoot in irregular lines, and occasionally pus forms in the anterior chamber, and in rare instances the inflammation may terminate in suppuration of the entire coats and consequent disruption of their contents, but the common termination is cataract." Professor Coleman, from very extensive observations made at a time when this disease was exceedingly prevalent, arrived at the conclusion that the affection resulted from the same conditions as those which engendered glanders and farcy, namely, contaminated atmosphere, resulting from ill-paved, ill-drained, unventilated stables. And the observations I have made lead me to the same conclusion, and all cases that I have examined have been amongst animals housed in underground stables, that were damp, illy-ventilated and dark. Arriving at but one conclusion and result of this disease, we may consider briefly its ultimation.

By the general term "cataract" is understood an opacity of the crystalline lens which may be capsular or lenticular, and it may involve with the lens and its tunics, which would then be termed "capsulo-lenticular." It is considered by all writers and admitted that the etiology of cataract is still shrouded in much obscurity and doubt. However, it would appear most probable that the principle of the loss of transparency of the lens is to be sought in an impairment of its nutrition, due to some morbid alteration in the vitreous humor and in inflammatory changes within the lens itself, primarily augmented by a morbid condition of the blood. Cataract may arise from a variety of causes. It is not unfrequently the sequel of disease, traumatic influences, etc. A fully formed matured cataract may be at once recognized even with the naked eye. The pupil is no longer clear, but it is occupied by a whitish opalescent body which lies close behind it, and it may be seen on any part of the anterior surface of the lens. Capsular cataract is found most frequently in those opacities of the lens which are complicated with iritis, and Murray strongly insists, "that here great proliferations of the intracapsular cells occur, and may subsequently undergo fatty degeneration and finally disappear and be replaced by calcareous deposits, the chalky de-

generation of the lens not unfrequently taking its start from the capsule."

Lenticular cataract is the one that the veterinarian sees as a rule. His attention will not be called until the case is so well advanced that the entire lens is more or less implicated. Partial, if not complete loss of vision in the eye affected, will be one of the main symptoms which will confront him, as complete cataract can be produced in a few days or weeks, according to the influences which aggravate and produce the disease. Treatment is not always expedient, and much more is it unsuccessful. The only specific is the knife. And that also is governed by circumstances, followed by a line of treatment which is not always successful. Finally, in the treatment of diseases incident to horses' eyes, the main specific to have at hand is common sense and a little ingenuity. Be able to cope with the situation as you find it. Be careful about your diagnosis. Give no opinion until you are sure that you are right, and especially render no opinion if subsequent events can prove that you were wrong.

ERGOTISM.

By DR. JNO. A. BELL, Watertown, N. Y.

(A Paper read before the New York State Veterinary Society.)

I am sorry to say that since we last met business, professional and otherwise, has so occupied my time that it has been impossible for me to give thought and attention sufficient to prepare a paper suitable to be read before this Society. However, as my name has been put down for something, I concluded it would not do to back down entirely and, having had quite a number of cases among cattle of what I diagnosed as ergotism, within the last few years, and never having seen a case previous to that time, to my knowledge, I concluded to write a few rambling remarks on this subject. Although veterinary literature on this particular subject seems to be quite limited, at least so far as I have been able to learn, I have endeavored to give you some practical statements from my

own experience, as well as the investigations of others, which may develop some ideas that will be useful, and gain new information which will be of benefit to some members of this Society, including myself.

But before proceeding with a description of the cases referred to, I have concluded to say a few words on the subject of ergot and smut of grasses, by which means our patients nearly always take the poison into their systems.

The cause that is most likely to produce the diseased condition of the grasses is muggy, damp weather ; and undrained soils favor the development of these ergot and spores of other fungi.

Just here I wish to call attention to an article on this subject written by Prof. George Vasey in the Report for 1885 of the Department of Agriculture, as I find nothing of a more recent date. His description is as follows :

“I made an investigation in May and June, and found the affected plants somewhat smaller than those that were not diseased. Otherwise they presented no unusual appearance when carelessly handled. On a careful examination, however, one or more of the leaves were found to be marked by lead-colored, slightly thickened lines about one sixty-fourth of an inch wide and one-sixteenth to one-fourth of an inch long, running lengthwise of the leaf. Sometimes but a single line or series of lines was to be found on a leaf, but usually there were several, in many instances the space between the two veins of the leaf being occupied by these discolorations, which extended from the base nearly to the apex. When one of these leaves was cut or torn across, it was found that each of the lead-colored lines referred to corresponded to a black, dirty mass occupying the center of the leaf and merely covered by the epidermis at the top and bottom. Shortly afterwards the epidermis ruptured along the dark lines, one side usually tearing before the other, and so exposed the smutty substance, which was shaken from the cavities and dispersed by the wind, under the action of which the leaves were soon reduced to brown shreds, by which the diseased plants could be readily distinguished, even from a distance.”

He also says: "As far as I know, the smut of timothy has never been examined chemically, nor have experiments been instituted to determine its action on the animal system. But until it has been shown to be harmless it will be safe to regard it with suspicion, and to avoid pasturing grass or feeding hay that is known to contain much of it."

Dr. Salmon, in reply to an inquiry from E. A. Prior, of Ohio, in 1887, said:

"I have never seen true smut in timothy, but have frequently seen it affected with ergot." Of course, I don't feel competent to present the scientific side of this question or to argue it in any form. I simply give you my opinion, based on my observations and experience in the cases I have had. In the first place, the general appearance of the grasses, including timothy and others, corresponded with the descriptions I had read of smut. Second, the weather during the season had been muggy and very wet, these being the conditions described by the authorities as favorable to the development of smut, ergot and other fungi.

This smut appears to have nearly all the medicinal properties of ergot. Yet I have never known in my practice a case of abortion from smut, although it is spoken of in many instances as having produced such an effect.

Nothing definite is known respecting the morbid anatomy of ergotism. It derives its name from the fact that it is the result of the ingestion of ergot. Beyond its effect as an irritant poison, the specific influence of ergot is exerted upon the organs of circulation, upon the central nervous system, and upon the uterus. Ergot produces a remarkable slowing of the cardiac rhythm, the arteries become contracted, with diminution or even disappearance of their channel, or formation of thrombi, the blood pressure falls and the veins become dilated and distended.

The most recent and consistent theory respecting these phenomena is, not that the muscular coats of the arteries actively contract, but that the venous walls are primarily relaxed. The veins are thus overfilled and the arteries drained of blood. The blood pressure is lowered and the heart, being insufficiently fed, contracts feebly and slowly.

Certain of the spinal centers, both motor and sensory, are first stimulated and afterwards paralyzed by ergot, directly, according to some authorities, and indirectly by others. The unquestionable action of ergot upon the uterus is explained by some authorities as due to stimulation of the center of the uterus in the cord. Others assert that ergot acts upon the muscular fibers of the organ, either directly or indirectly, through the blood supply.

Whatever may be the value of the several explanations of the action of ergot, the facts connected with it suffice to account for the specific phenomena of ergotism.

The small, feeble and infrequent pulse is due to an interference with the circulation; while the painful spasm, as well as the formications and other sensory disturbances are the direct result of the action of the poison upon the cord. The gangrene may also be partly due to the latter cause.

I don't think it necessary for me to lengthen this paper by giving a description of the different symptoms said to be produced by smut and ergot. Suffice it to say that, in my opinion the same feed may produce one or all the symptoms seen in ergot poisoning, such as convulsive and anasthesia; gangrene, dry or moist, causing sloughing of the hoofs; diseased condition of the mouth and tongue; twitching of the muscles, etc.

I will now proceed to give you, as well as I can, a brief history of the first cases that came under my notice.

It was during the month of December, 1888, that a gentleman named Waddley came to my office and reported that a number of his cattle in a dairy of thirty cows were suffering from swollen legs and very lame. He had noticed nothing unusual until about 1 o'clock the day before, when he let them out to water. Then he discovered that one cow was quite lame and that one of her hind legs was swollen badly. He thought little of it, supposing the animal had hurt itself in some way. But about 3 o'clock the same afternoon, when he went to the stable he found two others in the same condition. The following morning he found five others in the same condition, making eight in all. He wanted me to go and see

them. So as soon as convenient I drove out to his farm, a few miles from the city, and found them about as he had described. They were swollen quite badly, some on the hind legs, some forward and some on both. The swelling extended about half way to the hock on the hind legs and to the knee forward, and in one instance above the knee, some much worse than others. Two were so sore that for the first two or three days they were unable to stand except for a few minutes at a time, and even after that they were lying down much of the time. Most of the time they would lie on their sides, evidently suffering considerable pain. The other prominent symptoms were; twitching of the muscles, drawing up of the feet, breathing a little faster than is natural, temperature slightly below normal, pulse weak and slow, slight diarrhœa, appetite good except in the three worst cases, these latter not eating their usual allowance the first three or four days.

Never having seen any cases that resembled these, I investigated as to the possibility of their being frost-bitten, but soon concluded that nothing of that kind had occurred. I asked Mr. Waddley to come to the city again, as I did not have the necessary medicines. After perusing what literature I could find on the subject, which seemed to be quite limited, became quite positive and diagnosed it as ergotism.

In about a week and a half sores began to appear around the ankles and knees of two of the animals, and a week later quite large portions of flesh had sloughed off around the ankle and knees, and one had sloughed its hoof. The hoof was sloughed without any suppuration. A few days after the hoof had sloughed I made another visit and found indications of a new growth of horn. At this time I learned that the second animal, in getting up, had broken over at the ankle and was standing on the inferior end of the metacarpal bone. The third one had the appearance of a frozen foot, half way to the hoof, perfectly dry and dead up to a certain point and perfectly healthy above, with the exception of a slight swelling near the line of demarkation. The animals at this time appeared to be perfectly healthy except as to the symptoms

above described, with good appetites and bright appearance. Had I considered that it would have been profitable to the owner, I could have amputated, I think, with success. But not considering it so, I ordered the three worst cases destroyed. The remaining five, although swollen badly, some much worse than others, gradually recovered and in the course of a few weeks resumed their natural appearance, and thrived well during the remainder of the winter. But about two weeks after they were turned out to grass in the spring four of the five had another attack, and in September of the same year the fifth was seized with the trouble again. After limping around five or six weeks they all gradually recovered, without treatment except a change of pasture.

The remainder of the herd, although fed and used the same in every particular, did not show any signs of the disease.

There is but one way that I can account for the second attack. In the summer previous there was much rain, and hay did not cure well. The grass was not pastured down close, and as the new grass came up through the old stalks, the following spring the cattle were obliged to eat a good deal of the old dry stalks which, I think, contained the ergot that caused the second attack. Why eight cattle were affected in a herd of thirty, all fed and cared for equally, and the remaining five the second time, I am unable to say, but I hope some gentleman present will be able to give us some information on the subject.

In the way of treatment, I ordered a change of feed, and gave each cow an oleaginous cathartic. To some of the worst I gave stimulants, such as nitrous ether, adding occasionally a little tincture of opium and chloral to quiet the pain. I ordered the affected legs fomented with warm water three times daily and well rubbed with a mild, stimulating liniment, keeping the legs warm. I gave such local treatment as the cases required.

Such, gentlemen, are the facts, imperfectly presented, which have come to my knowledge in connection with this subject. As I stated at the outset, I do not pretend to be able to teach this Society anything. I am here to learn, and I hope

that this paper may excite sufficient discussion to repay you for listening to it, by the information we can gain from those who have had more experience than I have had in regard to the disease referred to.

VETERINARY EXAMINATION AS TO SOUNDNESS OF HORSES.

By DR. A. DRINKWATER, V.S., Rochester.

(A Paper read before the New York State Veterinary Society.)

Colonel Thompson, of Boston, now deceased, was a man of rare tact and ability, and by no means devoid of wit, in his profession as an auctioneer. On one occasion, while engaged in the sale of a horse, he was abruptly interrupted by a Mr. A., who, with a nasal sound characteristic of him, inquired if the horse was sound. The reply was, "Yes." While the sale was progressing and another half hundred was being tried for by the man of the hammer, the same Mr. A. burst out again with: "Colonel, do I understand you to say that this horse is perfectly sound?" The Colonel paused, and drew up his portly frame to its full measure; then looking Mr. A. full in the face, thus addressed him: "Mr. A., if a man should ask me if Mr. A. is a gentleman my answer would be, 'Yes;' but if he should ask me if he is a perfect gentleman—half, am I offered another half?" This instance of professional wit serves as a text which will find application throughout the world when horses are bought and sold, and when the veterinary surgeon is expected to give an absolute guarantee regarding the soundness of an animal.

When medical experts are called upon to examine a man who is a candidate for life insurance, he is expected to answer an almost unlimited number of questions, not only relative to his own condition, physiologically, both past and present, but that of his ancestors as well. The strictest inquiries are made to determine whether there was the slightest prospect of his being afflicted, under favorable circumstances, with any hereditary taint, even back as far as the seventh generation. "The sins of the father," etc., is a proverb even in the eyes

of insurance men, and for the reason apparent that personal soundness does not enter so much in their calculations as the diseases which carried off their fathers and grandfathers before them.

A veterinary surgeon cannot hold conversation with a horse with reference to his lineage. There is only one instance on record of a quadruped being able to speak, and that was Baalam's ass; and even in that marvelous case Baalam, according to the best authority, was not a veterinary surgeon. Yet the greatest ass since Baalam's, I think, is the veterinary surgeon who is willing to give an affidavit to the perfect soundness of a horse. This may seem a harsh statement, and yet I believe in its absolute truth. Physically considered, the horse exhibits as complex and as high a degree of organization as does a man. The heart, the lungs, the nerves, the muscles, the tissues, the glands, the bony structure, the hoof—all are adapted in his structure as means to an end as complex in their relations, as susceptible, comparatively, to disease by accident, neglect or heredity as the human being. Hence there enters into the question of his absolute soundness so many extraordinary contingencies that only the broad principles of pathology can be depended upon as a gauge of his condition at the time of examination. Among the most important as well as profitable duties of the veterinary surgeon is the examination of horses as to purchase-soundness, the latter meaning entire freedom from internal or external disease or indication of any character likely to impair his future usefulness. Many "horsey" men outside the profession, with an off-hand assumption of ability to read a horse as they would read a book, will give the animal a cursory examination of half an hour, and then with a few brilliant observations pronounce on an animal's condition with an assurance that absolutely dumbfounds a regular practitioner. Even among the latter it is a fact that wide divergence of views are often given about an animal, and it is this which has brought some discredit on a profession which absolutely demands more careful analysis, good judgment, fine intention and pathological information than is required from his brother doctor who has mankind for

a patient. To strike the golden mean of a certificate regarding the comparative soundness or unsoundness of an animal is a subject which I think of importance, and which could be profitably discussed at this meeting. Mistakes and oversights may happen to the most skillful in making an examination, no matter how thorough and exhaustive it may be from every standpoint, and by every scientific test known to the profession; and back of all this comes in the matter of undeveloped hereditary disease, and which, under certain circumstances, may appear a dozen hours after the examination pronounced favorable, and yet which may end fatally or permanently impair the usefulness of the animal. It is therefore asking a great deal of the veterinary surgeon to give an unqualified certificate of soundness for any animal. As you well know, horses are subject to periodical diseases, which are not apparent at a diagnosis unless the animal is suffering from them at the time of the examination. How can we determine by any known method, as to latent staggers, ophthalmia, rheumatism, internal tumors of various kinds and many other diseases which are liable to occur, under the right circumstances, at any time, like periodic lameness, partial luxation of the patella, or navicular arthritis. A horse may be suffering from the latter disease for quite a period without exhibiting a sign of lameness. I have seen horses which were driven every day for months without showing lameness or fever, and yet in the stable would continually keep shifting the foot from one position to another indicating pain therein, and which after a time developed into an unmistakable case of navicular arthritis. Yet a careful examination by a veterinary surgeon in the early stages of this trouble would not have developed any information of its existence. Periodic ophthalmia is also another very common disease impossible to detect unless the animal has had more than one attack. It leaves no trace behind which science can detect unless, as I have said, the affection is chronic. Yet this disease of the eye is almost certain to eventually ruin the sight, entirely or partly. Again, horses will have periodic attacks of colic from various causes and get over them without leaving a trace which the veterinary

surgeon can discern. The latter will pronounce the animal, in his opinion, entirely sound, and yet within twenty-four hours the animal may be a resident of horse heaven. I have known horses to have these spells of sickness every few days for a year and in one case for four years, and finally get well entirely. One case came under my observation a few years ago during the holding of the State Fair at Rochester. I was called to attend a very valuable stallion, aged two years. He was suffering considerable pain from what was evidently a case of acute indigestion. Remedies were administered, and in the morning the colt was apparently as well as ever. Before a week had gone by he was similarly attacked, and the same treatment was given, with the same beneficial effect as before. I inquired of the owner if he was liable to these attacks, and was told he had them quite frequently. I prescribed for the same stallion for the same trouble perhaps forty times. Every few weeks from the time he was two years old until he was six, at which age he died, he was affected with the trouble noted. I was called to attend him on his last attack, but he was dead before I reached the farm. I performed an autopsy on him and found a large pear-shaped body attached to the villious coat of the stomach. This tumor, which was of a fibrous nature and about a pound's weight, had a cyst in the center which, upon cutting into, I found contained about a tablespoonful of thick cheesy pus. Unquestionably this tumor was the cause of the animal's frequent painful attacks and his ultimate death. For four years he was used in the stud and was apparently sound, and yet he had, perhaps from his birth, a blemish that proved fatal and which no examination by any surgeon could have disclosed without cutting him open with a knife, a process which horse owners are not likely to sanction in order to get a certificate of unquestioned soundness.

I instance, in a general way, these points to bring out some discussion regarding the best form of a certificate to be made by a veterinary surgeon. I think that the Association should adopt some form which could be generally used, which would be conservative, and yet as definite as circumstances would

permit. Prof. Fleming says, in a late number of the *London Veterinary Journal*, discussing this topic, "That the question of unsoundness, and especially hereditary unsoundness, is one that demands serious consideration by the veterinary surgeons, and an examination of the subject appears to be absolutely necessary in order to ascertain how many of the ideas pertaining to it rests on tradition or fancy and not on substantial facts. It is well to get rid of sentiment and theory when dealing with a matter that involves such large and serious interests as those connected with horse production and utilization."

Truer words than these were never written, and I trust it will be the pleasure of this Association to express its sentiment regarding them.

"No hoof, no horse" is an old aphorism. In modern times there are a thousand ailments which go to say to many a horse-owner, "No so and so, no horse." But the science of veterinary surgery is keeping pace with that designed for the curing of human ills. It is true that we have got no Koch lymph for instantaneously paralyzing those equine bacteria known as botts, but through the noble efforts of our profession we have rendered ease to dumb animals, preserved their lives to a career of usefulness, and improved man's most faithful friend, so that in the time to come he will be like Shakespeare's horse so faithfully described in *Venus and Adonis*:

Round hoof, short jointed, fetlocks shag and long,
Round breast, full eye, small head and nostrils wide,
High crest, short ears, straight legs, and passing strong,
Thin mane, thick tail, broad buttock, tender hide,
Look what a horse should have he did not lack
Save a proud rider on so proud a back.

REPORTS OF CASES.

RUPTURE OF THE STOMACH IN THE HORSE.

By J. A. JOHNSON, D.V.M., ODEBOLT, IOWA.

Having had two cases of rupture of the stomach quite recently, and being unable to discover anything in the literature at my command touching the cases, I will report them with a view of eliciting an answer to the query.

The first case was brought to my infirmary early in the fall of '90 with the following history: Mare had been ailing for ten days or two weeks, as evidenced by her losing flesh and a capricious appetite; but the symptoms were not severe enough to cause the owner any uneasiness.

Ate regular feed in the morning; was hitched to a wagon and driven about one-eighth of a mile to a neighbor's where the owner was to get a load of hogs to bring to town; while loading the hogs the owner noticed that the mare was a little uneasy, but not considering it serious he started with a light load, and on arriving in town at once drove to my infirmary. This was about 10 A. M. The team was unhitched and the mare turned into a box stall, where she presented the following symptoms: Body covered with perspiration, ears drooping, pulse at the jaw imperceptible, respiration labored, anxious expression about the face, legs and ears cold; shortly threw herself, rolled a few times, then rose to her feet.

Now gave her a drench composed of alcohol, sulph. ether aa, oz. iss; this seemed to cause her some pain. Then gave morph. sulph. gr. 5, hypodermically, but obtained no relief; in about one-half hour gave another drench of the alcohol and ether as above; this time it caused decided uneasiness.

After having two or three spasms she became easy (about 11 A. M.) the sweat began to dry up and rigors set in; stood with feet sprawled out so as to brace herself; very slight tympanitis; no eructation of gas or regurgitation with the exception of two very slight and ineffectual attempts to vomit about 12:15 P. M.

The treatment meanwhile consisted of stimulants, alcohol, alternated with soda bicarb.

About 2 o'clock the pulse became quite strong, the eyes brightened and the animal appeared to be gaining strength.

I went into the office about 2:45 quite encouraged, notwithstanding that the tympanitis was slightly increased; had not been in the office but a few minutes when I heard a noise, and on going to the door saw the mare stagger and fall dead.

She was immediately drawn to a field about 100 rods dis-

tant where necroscopy was held, which revealed the following lesion: All organs healthy with the exception of the stomach, which presented a rupture about twelve inches in length on the convex face. The organ was apparently turned about half inside out, with what had been its contents loose in the abdominal cavity.

But what particularly attracted my attention was the nature of the rupture in the outer coat, which was about one inch longer at either end than that in the inner coat, thus making the rupture in the outer coat between two and three inches longer than that in the inner coats.

About two inches at one and one and a half inches at the other end of the rupture in the outer coat was a fresh tear, the remaining portion being an old rupture, in which the margins were indurated and inflamed, presenting a slight gangrenosis. The inner coat was healthy and the margins of the rupture in it were fresh.

In the evening of the 12th instant I was called to attend a case three miles in the country. On arriving there at 8 P. M. found the case presenting the following symptoms: Pulse imperceptible at the jaw, temperature $100\frac{4}{5}$ F., standing with the feet spread so as to brace the body. The following history was given: Had been worked up to about 2 P. M. hauling corn—light loads—when he was put into the stable and allowed to stand a short time, then receiving a light feed of corn and oats.

On the owner's return to hitch up he found the horse pawing; the harness being removed the horse immediately laid down and rested quietly for a few minutes, then rose to his feet. This was repeated several times during the afternoon.

Shortly after he was first taken sick he began to perspire very freely about the head and gradually it extended backward and was so profuse that the water dropped from the body.

About this time he vomited twice, quite a quantity of the ingesta escaping each time, after which the perspiration gradually ceased.

Between 6 and 7 o'clock he was taken with severe rigor. Then I was sent for and found him as above described.

His strength rapidly failed, and shortly after I arrived he began to get stiff and was ordered to be taken out of the barn.

After some difficulty, owing to his being so stiff, he was taken out, but only got about fifty feet from the door when he sank down in the snow and expired with scarcely a struggle.

Necroscopy was immediately held which revealed the same pathological lesion as was observed in case No. 1.

The rupture was only about ten inches long in the last case, but was about one inch longer at each end in the outer coat than it was in the inner coats, and at each end it was a fresh tear, while in the middle it presented the same lesion as did case No. 1, *i. e.* the thickened and inflamed margins showing that there was an old rupture of some days standing.

The organ (stomach) showed no signs of inflation except just along the margins of the rupture in the outer coat.

This was the first attack of sickness that the horse had ever had, so far as the owner knew.

As to the ætiology of this old rupture in the external coat I am at a loss, and hope that some pathologist will explain the subject through the columns of the REVIEW.

I have had several cases of rupture of the stomach in the horse, but these two are the only ones that presented this peculiar pathological lesion.

In the first case, that the rupture had existed in the external coat for ten days or two weeks was evidenced by the animal's condition; while in the second there was no indication of its existence, the animal was apparently healthy to within a few hours of its death, yet the outer coat had evidently been ruptured, about five inches in length, for a number of days.

LITHOTOMY.

By A. D. GALBRAITH, D.V.S., Greensburg, Ind.

I submit the following from notes taken at the time. A black gelding seven years old was brought to my hospital April 19, 1886, with the history that he had trouble in micturating, and occasionally passed bloody urine, and that his trouble had been increasing for several months.

The horse presented a very unthrifty appearance—shaggy coat of hair, impaired appetite, feeble circulation, and he was very dull and emaciated. I made a rectal examination and found a large calculi in the bladder. The case was explained to the owner, who consented to the operation, lithotomy.

The horse was prepared by feeding a laxative diet forty-eight hours, then his feed was omitted ten or twelve hours, and then an ounce ball of chloral-hydrate was given and the horse secured in the stocks for the operation. The perineum was then thoroughly washed, first with soap and water, then with a solution of bichloride of mercury 1-1000.

The catheter was passed into the bladder, and an incision made upon it at the perineum so as to freely expose the interior of the urethra; the catheter was then removed and the lithotomy forceps introduced through the wound into the bladder, and with the left hand in the rectum the stone was guided into the forceps and gently removed. It was large as a hen's egg and weighed three ounces.

The bladder was washed out with tepid water, and the lips of the wound kept together by sutures, and the parts dressed antiseptically with solution of bichloride of mercury 1-1000.

A large soft sponge was tied on the wound and kept saturated with the solution for six or eight days.

The parts healed rapidly, and very little urine escaped through the wound. On the second day his temperature rose to 102°, but was normal by the fifth day.

There was but little swelling. The horse did not miss a feed after the operation, and was ready for his work in three weeks.

I saw him about three months after and he was in fine condition, fat and sleek.

ABDOMINAL ABSCESS.

By G. TOWNE, D.V.S. Thompson, Conn.

The patient was a sorrel mare, fifteen hands high, about 12 years of age, weighing about 950 lbs., and used for drawing

purposes. I was called to see her August 30, at 8 o'clock P. M.

The history of the case was that she had been in the stable during the day and in the afternoon seemed quite uneasy, and pawing, particularly with the right anterior extremity, and refusing part of her food. This was all that I could obtain at this visit.

Upon examination I found the pulse and respiration accelerated, temp. 104° F. The general appearance was that of a long, rough and staring coat, cutaneous surface quite warm, extreme sensitiveness was observed by spinal pressure at the lumbar region, the visible mucous membranes were somewhat injected, urine and fæces of febrile character. I was informed later that she had not been in the best of health for some time, and that she was supposed to be pregnant, and that the period of pregnancy was expiring, yet I found this not to be the case on my first examination.

Occasionally she was disposed to an intermittent fever, and I prescribed accordingly the usually applied remedies.

In the course of three or four days the patient became convalescent, although a partial anorexia remained. She was allowed the liberty of the field by day and removed to the stable at night.

Her progression seemed to be quite satisfactory until the 25th of September, when she became decidedly worse, being quite debilitated and showed marked symptoms of anæmia, which continued to gradually increase in spite of therapeutic agents. During the time from September 26th to October 18th her spine curved to the left so far that it was three inches from its proper position.

The left flank appeared quite prominent, while the right was quite normal, with no perceptible sensitiveness on pressure. I had made rectal examinations from time to time, but could detect nothing abnormal except some displacement of viscera, until the present time, (October 20th), when I detected in the region of the right flank, though quite anteriorly, a large, oval, immovable object, which I diagnosed as a tumor, the nature of which I could not ascertain as yet.

The patient became very weak, taking no nourishment

but stimulants, viz: whiskey, eggs and milk, and inclined to remain standing. The pulse became soft and weak, respiration normal, temperature $98\frac{1}{2}^{\circ}$ F. At this time a dropsical swelling appeared at the point of the xyphoid cartilage, and in the course of a day or two in the region of the right flank there appeared another dropsical swelling, which continued to enlarge and in a short time the whole abdomen was augmented in size.

Hot fomentations were applied to the right flank and the tumor soon became doughy, pitting on pressure. On October 24th, concluding that a process of suppuration was the cause of all the trouble, I explored it with a small trocar and canula, and obtained a little pus, so I punctured the abscess with a heated cautery iron, which relieved the patient of four quarts of very foetid pus.

The cavity was washed out and cleansed antiseptically.

I prescribed a stimulating draught and left the patient for the night.

Besides the usual treatment for such wounds I prescribed three times daily for ten days the following:

℞ Tinct. Ferri Chloride ℥ iss.
Quiniæ Sulph., grs. xx.
Aqua, O.

The profuse œdema of the pectoral, abdominal and inguinal regions were very readily resolved. The cavity continued to discharge for some time, yet the healing process was slow but progressive and it finally healed.

By good nursing and grooming she recovered from her badly emaciated condition and from her debility; on January 1, '91, was apparently recovered; her spine had become normal again; it had been caused to curve by the enormous tumor pressing the viscera to the left side by contraction of the muscles of the right side.

I believe it the largest I ever saw in my limited experience and its internal wall was only the transverse muscle of the abdomen.

EXTENSIVE ARTICULAR WOUND TREATED SUCCESSFULLY
BY ANTISEPTIC DRESSINGS. *

In looking over the September number of your most welcome visitor, the AMERICAN VETERINARY REVIEW, on page 313 an article on Antiseptic Treatment, by Dr. Labaw, interested me very much, and as I have had some little experience with wounds of various kinds, I thought perhaps the following might be of interest to the profession.

On Sunday, August 31st, I was called to see a sorrel mare, nine years old, that had by some means got her right front foot over a saw-toothed-barbed wire in the fence. The wire had cut through the skin at the inferior third of the ossuffraginis, partially encircling the pastern joint, cutting downward until the coronary band was completely severed at the inner quarter of the hoof; a branch of the perforans tendon was also severed. In fact it was a most formidable-looking sight. The joint was opened and the blood flowing freely from both vein and artery. I took up the artery and ligated it with silk, and the vein by torsion, and dressed with aqua corrosive 1-1000; then laid on a quantity of absorbent cotton, over which a light bandage was applied. The next day I sent the ambulance for the mare and brought her to my infirmary. I then removed the dressing, being very careful to disturb the wound as little as possible, and dressed it with tinct. myrrh ℥iij., creosote ℥j, mixed and poured into the wound, applying the cotton and bandage as before. I used this dressing three times, applying it once every other day; then changed to white lotion once a day for a week, removing the cotton only every other day. At this time, with only twelve days treatment, the synovial discharge had entirely ceased and with it I ceased bandaging, and have since dressed the wound once a day with white lotion and powdered boracic acid alternately, being very careful not to remove any scabs from the edges of the wound or irritate it in any way while applying the medicine; and to-day, just twenty-two days since she was hurt, the animal is ready for work, apparently as

* This was sent to us without the name of the author.—Ed.

good as ever, the wound having entirely healed except a slight external portion of the skin, which is a little "raw" as it is commonly termed. I have used myrrh and creosote quite extensively in opened joints, and always with the best results. And another thing I have observed, is that too much washing and scrubbing of lacerated, and in fact all wounds, is worse than not enough.

After the first dressing, this wound has never had what you might call a good washing with soap and warm water, as is the common practice. Of course the surrounding parts are to be kept clean and well oiled.

KNOTTED GUT IN A HORSE.

By R. T. WHITTLESEY, D.V.S., Los Angeles, Cal.

The following case will be interesting more from its rarity and the aid it may be to future diagnosis than to any relief that may be rendered the patient.

The subject, a brown gelding six years old, and one of a fast road-team, was taken sick about 2 P.M., Dec. 22d. As the owner was hitching them up, this animal showed symptoms of pain by squatting and looking at his flank. The owner started for his ranch five miles away, and thinking it a touch of colic that would pass off with exercise, drove out about a mile, and stopped when the horse again showed pain; he was then taken back to the stable, unhitched, and turned into a small lot, where he rolled from side to side and looked at his flank, the right generally and well under. He would only stand for a few seconds, and the pain seemed to increase on standing. During the afternoon he was given three ounces of nitrous ether and a soap-suds enema.

I saw him first about 7 P.M. He was then acting about as he had all the afternoon, in almost constant but not very violent pain, hair wet from perspiration, nose and ears warm but the pulse very weak.

I suspected impaction, as he was short of work and fed principally on hay.

I administered an aloes ball and three-fourths of a grain of

eserine, repeating the eserine in about forty minutes. There was no evacuation of the bowels, nor did I much expect one; but I did expect that as the influence of the drug wore off, the horse would quiet down and be out of pain for the night. In this I was disappointed; although the pain lessened it never left him. An examination per rectum revealed nothing but a most violent contraction of that organ upon my hand.

About 10 P.M. I gave a hypodermic of five grains of morphine; it seemed to stupify him; he lay on his sternum, eyes partially closed, head waving slowly from side to side, and every little while looking at his flank.

I was uneasy about him and would have stayed through the night, but the owner said there was no use sitting there watching a horse sleep, that he would keep until morning; and took the lantern and started.

About 5.30 A.M. I received a telephone from the owner that the horse had pawed and rolled all night but was now standing up: had offered him water, which he refused.

I made up my mind then that there was an intestinal calculus, intussusception, gut-tie, or something of like nature, and I decided to make an examination per rectum, and if I could discover anything definite enough to warrant it, to attempt a surgical operation, by way of the inguinal canal, as I do for a ridgling, only making a much larger opening. But when I came to make an examination, although I thought I could feel what seemed a knot of the small intestines well to the right flank, it was too indefinite to warrant an operation.

However, I administered two grains of eserine, thinking that by the violent peristaltic effort it might be moved: but it not only failed in this but did not seem to distress the horse nearly as much as I have seen half the quantity do before, which I think due to the inflamed condition of intestines and lack of nervous sensibility.

I found his temperature to be 104° when I came in the morning, pulse almost imperceptible, membranes congested, but not a great deal of ecchymosis, and quivering of the muscles all over the body.

I told the owner I did not think the horse could possibly live. He said the horse was valuable and he wanted to do all he could, and suggested having counsel; which suited me perfectly.

When the veterinarian arrived I gave him the history, treatment, and what I believed was the trouble.

After an examination he differed with me, thinking it a case of impaction with paralysis, and suggested a favorite prescription, which was given.

The animal died at about 2 P.M., almost without a struggle; and at no time during his sickness did he show near the pain I have seen in spasmodic colic, and none of that delirious thrashing and pounding of the head so common in enteritis, but acted and died very similar to cases of strangulated hernia which I have seen in stallions, excepting that he did not sit up on his haunches.

And here I want to ask any member of the profession if they have ever seen a case of inguinal hernia in a gelding, strangulated or otherwise.

The post-mortem revealed a large tear in the mesentery which I think may have been there some time, and as complete a single bow-knot as can be imagined, tied about the middle of the small intestines.

COLLEGE NEWS.

BALTIMORE VETERINARY COLLEGE.

Having, in consequence of erroneous information, reported (in our January number), the closing of this institution, we take pleasure in correcting the misstatement thus inadvertently made. We learn, by a letter from D. H. Biedler, the Secretary of the Board of Directors of the Baltimore University, that Dr. G. A. Faville has resigned on account of his Government duties, and that Dr. A. Hassell, M.R. C.V.S., has been appointed to succeed him. Professor Ward still holds the Presidency of the College.

AMERICAN VETERINARY COLLEGE.

After a successful year this institution closed the labors of the sixteenth regular session with the usual commencement exercises at Chickering Hall, on the 18th of March. The arrangements and preparations on this occasion surpassed in every particular those of any previous year, and the various committees in charge of the management are entitled to no little credit for the success and the attendant enjoyment and interest of the evening.

The following named gentlemen received the degree of (D.V.S.) Doctor of Veterinary Surgery:

GRADUATES.

Ackerman, Edwin Braden.....	Brooklyn, N. Y.
Bachman, Edgar Daniel.....	Easton, Pa.
Bishop, E. Lyman M.....	Brooklyn, N. Y.
Busener, Oscar Emil.....	New York City.
Buckley, John Matthews.....	New York City.
Burby, Joseph William.....	Holyoke, Mass.
Burchsted, George Brinton.....	Providence, R. I.
Cawley, Amos Oliver.....	Lewisburgh, Pa.
Choate, Horace Henry.....	Windsor, Me.
Conover, Jonathan H.....	Copper Hill, N. J.
Connolly, Edward.....	New York City.
Deckard, Israel Kline.....	Middletown, Pa.
Delaney, James Edward.....	New York City.
Doughty, David Brush.....	Woodbury, L. I.
Dunn, Ralph Alexander.....	Titusville, Pa.
Elliott, Clement V.....	Vincennes, Ind.
Fenimore, Henry Deacon.....	Rancocas, N. J.
Gearhart, Daniel Cameron.....	Lewisburgh, Pa.
Goubeaud, George Joseph.....	Brooklyn, N. Y.
Harvey, Frank.....	Durham, N. C.
Hess, Anton Philip.....	Wheeling, W. Va.
Hewitt, Fred. Sterling.....	Meshoppen, Pa.
Hurlbert, Russell Chancey.....	Ava, N. Y.
Kenney, John Andrew.....	New York City.
Kock, Hermann.....	Brooklyn, N. Y.
Kroos, William Albert.....	Brooklyn, N. Y.
Lowe, John Payne, Jr.....	Paterson, N. J.
McDonough, James.....	Montclair, N. J.
Meehan, John Joseph.....	New York City.
Meyer, George William.....	New York City.
Murphy, Wilbur John.....	New York City.

Nesbitt, Edward James.....	Poughkeepsie. N. Y.
Odell, Edgar.....	New York City.
Palmer, Lewis Irving.....	West Bloomfield, N. Y.
Phyfe, Walter Hutson.....	Delhi, N. Y.
Smith, William Erwin.....	Sedalia, Mo.
Stout, Edgar Newton	Greensburg, Ind.
Thomas, Reginald.....	Decorah, Iowa.
Turner, La Forest Everette.....	Rockville Center, L. I.
Van Siclen, Abraham Ditmars.....	Jamacia, L. I.

The prizes were delivered by Professor Doremus to the successful contestants, as follows :

EDWARD JAMES NESBITT, D.V.S., received the first prize, that of the Board of Trustees for the best general examination.

REGINALD THOMAS, D.V.S., secured the Alumni prize for the second best general examination.

FRANK HARVEY, D.V.S., obtained the Faculty prize for the best practical examination.

WALTER HUTSON PHYFE, D.V.S., was adjudged the College Medical Association prize for the best paper presented and discussed at a meeting of the Association.

For the first time since the organization of the college there was no competition for the Anatomical prize.

Mr. Orminston received the Silver Medal for the best examination in anatomy in the junior class.

VETERINARY LEGISLATION.

AN ACT TO ESTABLISH A STATE BOARD OF EXAMINERS AND TO REGULATE THE PRACTICE OF VETERINARY MEDICINE AND SURGERY THROUGHOUT THE STATE OF NEW YORK.

The People of the State of New York, represented in Senate and Assembly, do enact as follows :

Section 1. Within sixty days after the passage of this act, the Governor of the State shall appoint seven veterinarians, each of whom shall hold a certificate of graduation from an incorporated veterinary college or university, to be selected from a number not exceeding fourteen (14) as follows :

Seven nominated by the New York State Veterinary Medical Society, and seven by the Long Island Veterinary Medical Society, and their successors shall be appointed in like manner.

§ 2. Each member shall take and file the constitutional oath of office required of public officers.

§ 3. The said members of said Board shall meet on the second Tuesday of July in the year 1891, in the city of Syracuse for organization. The hour and place of meeting to be designated by the Secretary of the State Society, at which time they shall elect a president, secretary and treasurer, and may adopt such rules and regulations not inconsistent with law as they may deem necessary.

§ 4. Each member of said Board shall hold office during good behavior and may be removed by the Governor for misconduct or incompetency upon reasonable notice of charges made against him and an opportunity to be heard. But no member shall hold office after he is sixty-five years of age, and the term of office of any member shall expire upon his reaching that age.

§ 5. It shall be the duty of said Board to examine any person over twenty-one years of age and a resident of this State applying for licenses under this act, provided that said applicant shall first show to the satisfaction of said Board that he has practiced veterinary medicine and surgery for a period of not less than ten years or that said applicant holds a diploma or certificate of practice from an incorporated veterinary college or university, or from the Agricultural Department of Cornell University, after at least two years of continuous study thereat, and shall have duly paid to the treasurer of said Board all fees hereinafter prescribed.

§ 6. Said Board shall keep a record of all persons licensed by them to practice veterinary medicine and surgery, and shall file with the Secretary of State and with the Secretary of the New York State Veterinary Medical Society, on or before the first day of July of each year, a detailed report of the proceedings of said Board, together with a statement of all their receipts and disbursements.

The members of said Board shall hold at least one meeting each year for the examination of applicants and as many other meetings as they may deem requisite. The first meeting of the said Board shall be held on the first Tuesday of May in the city of Syracuse, of which proper and timely notice shall be given through the veterinary journals of the State.

ARTICLE 5. Five members of said Board shall constitute a quorum, and the concurring vote of a majority of the members present at a meeting at which there is a quorum shall be deemed the decision of the Board.

ART. 6. Every applicant for a license shall upon making his application pay to the Board of Examiners the sum of twenty dollars, and on receiving his certificate the further sum of five dollars. In case of failure at any such examination the applicant after the expiration of six months and within one year shall have the privilege of a second examination by the Board or by a committee of one or more of the Board without the payment of an additional application fee.

ART. 7. From the income provided by this Act the expenses of the examiners shall be paid. Any surplus after all proper expenses incurred by the Board shall have been met, if any surplus shall remain, shall be apportioned among said examiners pro rata, as compensation for their services.

After July 1st, 1891, every person now practicing veterinary medicine and surgery in this State by virtue of Chapter 313 of the Laws of 1886, who does not hold a certificate of graduation from some incorporated veterinary college or university or the Agricultural Department of Cornell University shall assume the title of "Farrier" until he shall obtain a certificate of graduation from an incorporated veterinary college or the Agricultural Department of Cornell University or a license to practice from the State Board of Examiners. And it shall be the duty of the County Clerk to write opposite the title the record of the veterinarians veterinary surgeon or any other like title of the name of every practitioner who has registered under the provisions of Chapter 313 of the Laws of 1886, and who does not before July 1st, 1891, produce a diploma as evidence of his graduation from some incorpora-

ted veterinary college or university the words the title annulled and the title "Farrier" substituted under the provisions of Chapter of the Laws of 1891, inserting the Chapter under this Act.

After July 1st, 1891, it shall be unlawful for any person to practice veterinary medicine and surgery or any branch thereof in this State who are not now legally authorized to practice and those who shall not obtain the certificate of qualification after due examination from said Board of Examiners.

Nothing in this Act shall be construed to prohibit students from prescribing under the supervision of duly authorized preceptors or to prohibit gratuitous services in cases of emergency or to prohibit any legally qualified practitioner, residing on the border of a neighboring State, meeting surgeons of this State in consultation or residing on the border of a neighboring State and duly authorized under the law thereof to practice veterinary medicine and surgery therein whose practice extends into the limits of this State, providing that such practitioners shall not open an office, or appoint a place to meet and treat patients, or receive calls within the limits of the State of New York.

§ 7. Every violation of this act shall be deemed a misdemeanor.

§ 8. This act shall take effect immediately.

This bill was introduced in the Legislature Feb. 26th, by Mr. Peck, of Cortland County.

BIBLIOGRAPHY.

PRINCIPLES OF SURGERY.—BY N. SENN, M.D. (F. A. Davis, Publisher).

We have often deplored the lack of means and opportunities for professional improvement under which our American veterinarian investigators labor in consequence of the absence of a sufficiently extensive and comprehensive literature in the English language, like that which pertains to nearly every other profession. For this reason we are frequently compelled to recognize the necessity of culling largely from the various medical publications, both of a permanent and transi-

ent character, which come into our hands, within the purview of our particular guild, and we seldom fail, in doing so, to find many matters of great interest and value, upon nearly every topic involved in veterinary science. An illustration of this is afforded by the new work of which we have received a copy entitled "Senn's Principles of Surgery," which proves to be one of the most interesting of the various works written on the subject to which it is devoted. The work is not only interesting and attractive because of the neatness of its literary execution, but also in respect to the peculiar arrangement of the contained matter.

It opens with the subject of Regeneration, including that of the different tissues, which, with the subject of Inflammation, occupies the first four chapters of the work. The reader is then introduced to the subject of Pathogenic Bacteria, and from that point we are brought to the consideration of the whole range of surgical diseases which are deemed to be of a parasitic nature.

In this place the subjects of necrosis, suppuration, with its various modes of development, septicæmia, pyæmia, erysipelas, tetanus, rabies, tuberculosis, actinomycosis, anthrax and glanders, are severally treated, the text being illustrated by 109 wood cuts. It is not only a book for both the student and the general practitioner, as the author remarks, but the statement may with propriety be amended by making it read: "for the student and general practitioner of *both human and veterinary surgery*,"

DISEASES OF THE SHEEP.—BY JOHN HENRY STEEL, F.R.C.V.S., etc.—Longman, Green & Co., N. Y.

The name of this author has been already so favorably and so often brought before the profession that a new work from his pen is sure to be recognized in advance as a contribution of interest and value, with a confident anticipation of the importance of his facts and the soundness of his conclusions. The present work will, in this respect, form no exception, but will be welcomed by the students of veterinary science in a similar appreciative spirit.

In a notice of this book by another we are told, in a depre-

catory way, as detracting from the practical value of the author's teaching, that they are the instructions of one who has had but little, if any, opportunity of acquiring a sound experience in the domain of ovine pathology.

This may hold good to a certain extent, but it seems to us that this rather enhances than diminishes the usefulness of the work, from the fact that its conclusions are likely to be the result of fresh and original research and laborious personal investigation, rather than that of building on the foundations of others and traveling in a worn and beaten path, and merely following the old footprints.

It cannot be doubted, therefore, that as a companion of Youatt's old, though excellent standard book on sheep, the publication of "Diseases of the Sheep," by Longman, Green & Co. supplies a want much felt by practitioners whose professional opportunities and business appointments demand a special aptitude in the application of their knowledge in this special department of their labor.

In this work the subject is divided into eleven principal chapters, well written and of easy reading, with nearly one hundred illustrations. Every recent modern discovery pertaining to the subject has been carefully collected in the three hundred and fifty pages which compose the volume.

OBITUARY.

JOHN H. STEEL, F.R.C.V.S.—This eminent veterinarian died on the 28th of January at Bombay, India, at the age of thirty-five years. He was little less than a victim to his profession, or at least to the special work which he had undertaken to accomplish in and for India, being among the pioneers of veterinary science and education in that country, and he succumbed to a relapse of a disease which ought to have prevented his sojourn in such a climate. His death must prove a serious loss to the profession in India, who had in him an influential friend and able teacher. The profession is indebted to him for numerous and well-known works, among

which may be enumerated those on equine anatomy ; on diseases of the elephant and of the camel, and canine and bovine pathology. His last book, on diseases of sheep, has made him known in this country as well as in Europe. He was the editor of the *Quarterly Journal of Veterinary Science* in India, the issue of which, we understand, has ceased since his death.

EDWARD EVERETT ACKERT.

Whereas, it has pleased the Almighty in His divine providence to remove from our midst Edward Everett Ackert, be it

Resolved, That by his death the class of 1891 of the American Veterinary College sustains a loss, which is felt deeply, of one of its brightest and most promising members. Also be it

Resolved, That by his genial and kind disposition he had endeared himself to all, and that we greatly miss him as a dear friend, classmate and colleague. Also be it

Resolved, That a copy of these resolutions be sent to the AMERICAN VETERINARY REVIEW for publication.

GEORGE W. MEYER, }
J. E. DELANY, }
O. BUSENER, } *Committee.*

SOCIETY MEETINGS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

A special meeting of the Comitia Minora of the United States Veterinary Medical Association was held at the Hotel Royal, New York City, on Jan 27, 1891, at 8 P. M.

Dr. Coates, Chairman, called the meeting to order and the following members responded: Drs. Huidekoper, T. B. Rayner, Coates, R. A. McLean, Winchester, Dougherty, Hoskins, and Robertson. Absent, Drs. Williams, Butler, and Lyford.

Secretary Hoskins then offered the following resolution: That we recommend to the Association that the meeting for 1893 be held at Chicago and that it assumes an international character. After some discussion an amendment was offered and accepted that a committee of three be appointed to propose the subjects for discussion, which was carried.

The place for meeting of 1891 was then considered, the Secretary reading ap-

peals for the cities of Boston, Baltimore, and Washington, with a letter from Dr. Williams, one of the western members of the Committee, and after some discussion a motion was made that we meet in Washington, D. C., which was carried.

A motion was then made that a committee of three be appointed to complete the necessary arrangements, which was adopted, and the Chair announced the names of Dr. Huidekoper, Hoskins, and Dougherty as the committee.

After the adoption of some other routine matters the meeting adjourned.

W. HORACE HOSKINS.

Secretary.

NEW JERSEY STATE VETERINARY SOCIETY.

The semi-annual meeting of the New Jersey State Veterinary Society was held in Saenger Hall, City of Newark, on Thursday, February 5, 1891. Meeting called to order promptly at 2 P. M., the President, Dr. Loblein, occupying the chair.

On roll-call the following number answered to their names: Drs. Auteureith, Corlies, Hopkins, Krowl, Loblein, Lowe, Gacock, Sauter and Sellers.

Minutes of last meeting were read and approved. It was regularly moved and seconded that the application of Dr. Dorney be laid on the table—carried.

Moved and seconded that the Secretary correspond with the Dean of the New York Veterinary College and find whether Dr Otto Von Lang is a graduate of said College—carried. Dr. Hopkins proposed the following veterinarians for membership: Drs. T. H. Ripley, E. R. Ogden, E. C. Batten and W. F. Harrison. The applications were referred to the Board of Censors for action.

Dr. Lowe, on behalf of the United States Veterinary Society, extended to the New Jersey State Veterinary Society an invitation to attend their next meeting to be held in Washington, D. C., September next. On motion the invitation was accepted. On motion the bill presented by the Secretary for printing, postage, etc., was ordered paid. The use of sulphate of strychnia by hypodermic injection in purpura hæmorrhagica was the subject of lengthy remarks by Dr. Hopkins of Newark, the Dr. claiming that in one-eighth grain doses he has had remarkable success. Before using this treatment his percentage of loss was great, but since using strychnia he has cured every case the treatment was used on. The Doctor advocates the hypodermic injection of strychnia in one-eighth grain doses every four hours, injected into the healthy tissue, and combines, as soon as the case will permit, tonics of iron, cinchona, gentian, etc., given by the mouth. He stated that cases that were apparently in the last stages of the disease were completely cured by his treatment; in cases where the disease was just making its appearance, the disease was checked almost immediately. In fact in every case that the treatment was used, the patient improved as soon as the treatment was commenced. Several cases of luxation of the patella due to phimademos were reported, causing considerable discussion. The luxation was considered to be due to muscular relaxation. The cases being exceedingly rare the discussion was of great interest.

Dr. Krowl gave the symptoms of a very interesting case of melanosis in a black mare, the Doctor stating the impossibility of making a correct diagnosis,

owing to the fact that the only place of the pigmentary deposits was in the kidneys. The kidneys degenerated, formed an abscess, which broke in the abdominal cavity, causing death.

On motion it was agreed to hold the annual meeting in New Brunswick.

A. T. SELLER, *Secretary*.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Bolyston Place, Boston, Wednesday evening, Jan. 23th, President Thomas Blackwood in the chair.

The Secretary being absent the minutes of the last meeting were not read, and the roll was not called.

Dr. J. M. Skally was elected Secretary *pro tem*.

The following members were present: Drs. Blackwood, Osgood, Marshall, Haddock, Peterson, Emerson, Lee and Skally.

After a general discussion of various topics the meeting adjourned.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening Feb. 28th, 1891, President Thomas Blackwood in the chair.

Members present: Drs. Becket, Blackwood, Bunker, Emerson, Hadcock, Marshall and the Secretary. Visitor, Dr. Wilbert Soule.

Minutes of the two previous meetings—November and January—read and accepted.

The Secretary reported for Dr. Winchester, who was appointed a committee of one to invite Dr. Van Schaick, of the Pasteur Institute of New York, to address the Association upon rabies, that Dr. Van Schaick's time would not permit of his coming to Boston to give such an address at present.

There was no essayist for this meeting, but Dr. Bunker agreed to read a paper before the Association at the March meeting, subject to be announced later.

The members present then took part in a general discussion upon the following topics :

First, the action of the Cattle Commissioners regarding glanders and tuberculosis, and the folly of three laymen, such as the Board is composed of, in considering themselves as experts on animal diseases, and the harm they do the community in setting the opinion of competent veterinarians at naught.

Second, the diagnosis of bovine tuberculosis, especially the difficulty of detecting the disease in its incipiency.

Meeting then adjourned.

AUSTIN PETERS, *Secretary*.

NEBRASKA VETERINARY MEDICAL ASSOCIATION.

A call of the graduated veterinarians of the State of Nebraska, by Drs. Wilson and Cosford, to form a veterinary medical association, resulted in a meeting

at the Windsor Hotel, Lincoln, on Tuesday, Jan. 13, 1891. The following veterinarians responded to the call: Drs. Young, Blackwell, Ebbitt and Rammaciotti, of Omaha, Dickey, of Seward, Noble, of Blair, Taylor, of York, Hammond, of Wayne, Everett, of Hastings, Osborne, of Fremont, Frothingham, Lord, Thomas and Cosford, of Lincoln.

Dr. Noble was elected to fill the offices of Temporary Chairman and President for the ensuing year. Dr. Rammaciotti was made Vice-President; Dr. Cosford as Honorary Secretary; Dr. Young, Treasurer; Drs. Ebbitt, Blackwell and Dickey, Board of Trustees. Dr. Young submitted a copy of the New Jersey Veterinarian Association's by-laws and constitution for the consideration of the meeting, which were adopted with several changes. Dr. Burgess, of Beatrice, who has spent one session at college, was admitted on probation, to receive full benefits of the Association as soon as graduated.

A general discussion followed the adoption of constitution and by-laws, and the sense of the meeting resulted as being averse to the admission of any but graduates of legalized veterinary colleges, and to endeavor to obtain legislation in favor of professional veterinarians. The motion of Dr. Dickey that the chair appoint a committee of three to draft a bill to present to the Legislature resulted in the appointment of Drs. Noble, Osborne and Young. A motion was made and seconded that the meeting adjourn to meet at the same time and place on Tuesday, Jan. 20, 1891.

The next regular meeting of the Association will be held at the Merchants Hotel, Omaha, on the second Tuesday in March, 1891.

S. E. COSFORD, V.S., *Secretary*.

The semi-annual meeting of the Nebraska Veterinary Medical Association was held March 10th, in the parlors of the Merchants Hotel, Omaha, Neb. The meeting was called to order by the President, Dr. E. S. Noble, and the following members responded to roll call: Drs. Blackwell, Cosford, Ebbitt, Lord, Noble, Rammaciotti and Young. Guest, Dr. S. Stewart, of Council Bluffs, Ia.

Dr. Wilson, of Lincoln, was elected a member.

Dr. Lord presented a paper on antiseptic surgery, which was well received and thoroughly discussed.

Dr. Young's paper was postponed by request.

Dr. Stewart presented a paper on the use of cannabis indica in colic, which elicited a liberal discussion.

The essayists were tendered a vote of thanks.

On motion, Dr. Stewart was elected an honorary member of the Association.

The President appointed Drs. Young, Taylor and Dickey as essayists for the next meeting, which will be held at Lincoln in September, '91.

A motion prevailed to create a legislative committee, to secure, if possible, the passage of an act to regulate the practice of veterinary medicine and surgery, now pending in the Legislature. The President appointed, as such committee, Drs. Rammaciotti, Lord and Cosford.

After the disposal of routine business the meeting adjourned.

S. E. COSFORD,
Secretary.

WISCONSIN VETERINARY ASSOCIATION.

This society was organized on the 18th of March and met in the rooms of the State Agricultural Society. The following officers were elected :

President, V. T. Atkinson, V.S., Milwaukee; Vice-President, J. L. Scott, V.S., Beaver Dam; Secretary, W. P. Freeman, V.S., New Richmond; Treasurer, C. H. Ormond, V.S., Milwaukee; Censors, J. F. Raub, D.V.S., Monroe; L. R. Baker, V.S., Madison; A. Kurtz, V.S., Appleton.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

The usual fortnightly meeting of this Association was held on March 12th, Prof. D. McEachran in the chair.

Prof. Mills reported that the "Reference Handbook of Medical Sciences," consisting of eight volumes, published by Wood & Co., had been received and placed in the library. He also reported that experiments on temperature of dogs, horses and other animals were being made by Drs. Parker, Robertson, McKechie, himself and others. Mr. Miller and Mr. Macaulay have been investigating the action of chloroform on horses.

Mr. Simpson read a paper on eversion of the uterus and the methods employed in dealing with these cases. He recommended $1\frac{1}{2}$ ounce doses of chloral hydrate as a calmative. A lively discussion followed on the comparative merits of chloral and opium for this purpose, in which Dr. Mills, C. McEachran and Baker took part. Mr. Comstock referred to two cases of amputation of the uterus on range cattle which had come under his observation in Montana. The chairman also referred to serious cases of eversion in both domestic and range cattle. Dr. Mills recommended Batléy's sedative solution in preference to tinct. opium in these cases. Dr. Nelson Walsh referred to a case of eversion in a mare.

Mr. Gorham communicated a case of fissured teat in a cow, a fistula nearly half way up the teat, the result of an injury. He treated it by making a fresh wound, when the cow was not in milk, and stitching it up, resulting in complete closure of the fistulous opening.

Mr. D. McDonald presented a case of laryngitis healed by poultices and saline febrifuge medicines, and Mr. Watson read a paper on premature labor pains in a cow, which led to a discussion on the action on the foetus of drugs administered to the mother for the purpose of quieting the animal and lessening the tendency to straining. The chairman explained that owing to there being no direct circulation of blood between the mother and foetus, the latter was thereby protected from the action of such drugs, whereas, drugs given the mother was directly communicated to the foal after birth and recommended this means of giving medicines. He had seen far better results in foals from drugs so administered. Drs. Mills and Johnston followed by some remarks on the subject.

Mr. St. Louis followed by communicating a case of rheumatic arthritis in a foal, leading to an animated discussion on the pathology of rheumatism. Dr. Johnston related the post-mortem of calves at Munich suffering from this disease.

Mr. McCrank read a paper on azoturia or "hæmoglobinuria," a disease peculiar to idle horses which receive full complement of food without exercise, resulting in a plethoric condition, and when the animal is exercised the muscles

of the quarters swell, he loses power more or less complete; the urine becomes coffee or porter colored, containing albumen, hæmoglobin, and sometimes blood cells.

Dr. Wyat Johnston presented a specimen sent by Dr. J. M. Parker, of actinomykosis on the left face and superior maxilla of a cow, the peculiar rounded yellow spots caused by the actinomyces. He pointed out the difference between this disease and osteo sarcoma, it being caused by these vegetable spores. That the parasitic fungus often found its way into the bone by the puncturing of the gum by straw or coarse grass stalks. Being most frequent in animals used for food for people, it being communicable to man as well as to other cattle, it is a matter of importance for sanitarians. He also exhibited specimens of pleuro-pneumonia, and specimens of the lungs of Canadian animals suspected of pleuro-pneumonia by inspectors in Great Britain. He explained the differences, which, however, in the hardened specimen are not well marked. Undoubtedly there exist forms of pneumonia in cattle, resulting in pathological changes simulating pleuro-pneumonia so closely as to make it difficult to differentiate between them, and until a micro-organism shall be discovered in pleuro-pneumonia we must rest our opinion principally on the history leading or not to contact of living diseased with living healthy cattle. Dr. McEachran explained that in the fresh section of so-called "Canadian Lung" the alveoli and interlobular spaces were filled by a white waxy exudate, while in pleuro-pneumonia the exudate in these spaces is invariably fluid, and the general condition of the lung dropsical, and in the former there is usually an absence of the necrotic centres and various pathological evidences of progressive inflammation, seen in contagious pleuro-pneumonia.

This closed the last active meeting for the session, which has been an unusually successful one for this Association.

ONTARIO VETERINARY ASSOCIATION.

The Annual Meeting of the Ontario Veterinary Association was held in the Ontario Veterinary College, Toronto, Dec. 19th, 1890.

In consequence of the absence of the President, Mr. D. McIntosh, the Vice-President, Mr. D. Gibb, took the chair, and in opening the meeting made a few appropriate remarks, regretting the absence of the President, who had written expressing sorrow at his not being able to attend.

The following gentlemen were present at the opening of the meeting, several others coming in before its close:

Prof. Smith, Messrs. O'Neil, Quinn, Shaw, J. H. Wilson, J. Wende, Lloyd, Gibb, C. Elliott, McCowan, McArthur, Hand, Steele, Hawkins, Gallanough, W. G. Wilson, Heslop, Hawkins and Sweetapple.

The minutes of the last meeting were read and confirmed; and the Secretary's and Treasurer's reports were then read, showing the finances of the Association to be in a good condition.

Mr. Heslop of Appleby, Ont., and Mr. F. J. Gallanough were duly proposed and elected as members.

Mr. Hawkins of Detroit was elected an honorary member of the Association, and on motion of Prof. Smith, seconded by Mr. John Wende, Dr. Huidekoper,

of Philadelphia, was elected an honorary member. Mr. O'Neil, of London, read an interesting paper on soundness, and a lengthened and animated discussion took place, in which Messrs. Lloyd, Hawkins, Elliott, Wilson, Wende, Shaw and others took part, on the various condition of soundness and unsoundness.

Mr. John Wende read an interesting paper on prolapsus uteri in the bitch, the retention of the uterus being ineffectual. He resorted to laparotomy and fully described the operation for its retention. It was moved and seconded that the thanks of the Association be presented to the readers of papers. Dr. Duncan mentioned instances of nodules on the mesentery produced by parasitic worms. Dr. Hopkins described some instances of furnuculus or gangrene in Detroit, and cases of the same were mentioned as having occurred in Toronto, Buffalo and some other cities. Mr. Gibb mentioned that the disease occurred in Boston in 1857, and had been there treated with pyroligneous acid. Several took part in the discussion of this disease.

Mr. Gibb vacated the chair and Mr. Cowan presided. The election of officers then took place with the following result :

Mr. W. Gibb, St. Mary's, Ont., President; Mr. D. McArthur, Ailsa Craig, Ont., First Vice-President; Mr. J. Wende, Buffalo, N. Y., U. S., Second Vice-President; Mr. C. H. Sweetapple, Toronto, Ont., Secretary; Mr. W. Cowan, Galt, Ont., Treasurer; Messrs. O'Neil and Elliott, Auditors; Messrs. Burns, Hand, W. H. Wilson Steele, Gallanough, Hopkins, Ormsby and Lynch, Directors; Messrs. J. H. Wilson and O'Neil, Delegates to Western Fair Association; Mr. W. Cowan, Delegate to Central Permanent Farmers' Institute. Prof. Smith was elected honorary President.

Mr. Cowan vacated the chair and the President-elect, Mr. Gibb, took his seat. He thanked the gentlemen present for this honorable position in which they had placed him, and promised to do all that lay in his power to forward the best interests of the Association and also for the profession at large and said that he thought it the duty of every qualified practitioner within reach to support the Association by his presence at its meetings.

Messrs. McArthur, Wende and Hawkins also gave short address. Mr. Hawkins spoke in disapproval of qualified practitioners associating themselves in business with empirics. He also mentioned that many prominent positions in the United States were held by graduates of the Ontario Veterinary College, and was greatly in favor of the summer practice required of all students attending the College.

The sum of \$25.00 was voted to be appropriated for a medal to be competed for by the students of the Ontario Veterinary College at the approaching spring examinations.

Mr. Shaw described a case of amputation of a portion of the anterior part of the inferior maxillary bone of a horse and also by request described the operation for roaring.

Dr. Duncan remarked that Prof. Axe disapproved of the operation in consequence of the severity of the cough that supervened. Prof. Smith said that the general opinion amongst veterinary surgeons in Great Britain was not in favor of the operation, but that it might be beneficial in some cases for slow work.

At the close of this discussion the meeting adjourned.

AMERICAN VETERINARY REVIEW,

MAY, 1891.

EDITORIAL.

TUBERCULIN IN VETERINARY MEDICINE.—Several months have elapsed since the statement of Dr. Koch, relating to the use of tuberculin in the treatment of tuberculous diseases, was made public; and also the publication of the constituents and preparation of the wonderful lymph. Since that time numerous experiments have been made, and article upon article has been written, either recommending the use of the new therapeutic discovery, or condemning it in the most severe manner. The time has probably not yet arrived to announce, in a positive manner, what are the real advantages to be derived from the use of the lymph; but it is very evident that a great deal of what was expected has failed to be realized.

In one of our late considerations of the subject we expressed our regrets that experiments had not been made on some of our large domestic animals, which, from the fact of their being commonly affected with tuberculosis, we thought would have been excellent subjects to test the value of the tuberculin.

It seems that we were in error, for at the time when we were writing, the veterinary school of Dorpat (Russia), as our friend Prof. Schwartzkopff has informed us, was already carrying out the experiment we were speaking of. It was, however, evident that veterinarians, who could not help observe the value and importance of the subject, would not remain indifferent, and now we read in several of our exchanges reports of the organization of scientific works at the various schools of Europe, and also by some veterinary societies. America has not been backward in the movement, and the following, which we received some time ago from Prof. W. L. Zuill, speaks for itself :

ORGANIZATION OF A KOCH LYMPH COMMISSION AT THE VETERINARY DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA.

The members of the Clinical Staff of the Veterinary Hospital of the University of Pennsylvania held a meeting on Saturday, February 14th, for the purpose of organizing a commission to examine by careful and scientific investigation into the value of Koch lymph in veterinary medicine. The commission intend to prosecute the study of this important question with the view of determining its value in three special directions. First: To determine whether or not it is of any value to the veterinarian in diagnosing tuberculosis in cattle. Second: To discover, if possible, what may be its value as a curative agent. Third: To prove, by a series of carefully made experiments, if it be possible to give healthy animals immunity to the contagion of tuberculosis, and for what length of time.

The Commission organized by the selection of Prof. W. L. Zuill, Chairman, and W. Edgar H. Landis, Secretary. The other members of the Commission are Prof. Simon J. Harger, Drs. Chalkley H. Magill, Charles Williams, Wm. H. Ridge, Robert Formad and John Marshall.

Milch cattle, supposed to be suffering from tuberculous, have been procured, and are being subjected to a most rigid examination to determine the presence of the disease. The temperature of these animals will be taken every two hours for at least twenty-four hours prior to the primary injection. The members of the Commission will make a careful physical examination of the animals, and will individually record the facts as they are clinically presented; these records will be compared in making up the diagnosis.

A bacteriological examination will also be made to determine the presence in the milk and bronchial mucous of the bacillus tuberculosis; gelatine cultures will also be made from the milk and bronchial mucous, which should positively identify the bacilli if they be present.

In this way the Commission expect to satisfy themselves that a given animal positively has tuberculosis. The lymph will be injected in comparatively large doses and the temperature and physical signs observed every hour during the

following days and nights ; it is expected that high febrile reactions will occur, similar to those noticed in the human family.

Autopsies will be made on these animals and careful macroscopical and microscopical examinations of all the organs of the body will be made in order to learn the effect of the treatment ; culture experiments will also be made of these tissues with the view to determine what has been the effect of the lymph upon the vitality of the bacilli contained in them. Other animals in the earlier stages of the disease will be procured if possible and an effort made to cure them. If they cannot be obtained in a stage sufficiently early to be suitable for this purpose, the disease will be produced by inoculating healthy animals with pure cultures of the bacillus tuberculosis, and the curative action of the lymph given a full and complete opportunity to prove its value.

Control experiments will be carried on at the same time. A very important line of work laid out by the Commission is that which is to determine the immunity of treated animals to the disease of tuberculosis. It is to be hoped that this can be established, as it will confer upon mankind the greatest of blessings. Should it be possible to establish immunity in cattle, if only for one year, it will be of inestimable value to the human race.

The hospital authorities have set apart separate and isolated wards for the special use of the Commission in their investigations, and the tuberculosis commission of the University Medical Hospital will furnish the lymph necessary to carry on the work of the Veterinary Commission.

From communications in the hands of the Commission from special correspondents at the Royal Veterinary School at Berlin, it is learned that up to the time of writing no *official* or *extended* investigation as to the value of Koch's lymph in the tuberculosis of animals had been undertaken in Germany.

This investigation undertaken by the Commission of the Veterinary Department of the University of Pennsylvania to determine the influence of Koch's lymph in animals, is the first undertaken in this country. The Commission believe that this remedy of Koch's will prove to be of great value to the veterinarian and agriculturist by enabling them to detect the disease in its earliest stages, when it is so obscure as to evade the most careful physical examination. Should this prove to be true it will enable the stock owner to weed out the diseased stock from his herd even before they can do harm to his healthy cattle, or to the consumers of the products of his dairy.

The opinions of veterinarians whose experience gives weight to their statements indicate that from 5 per cent to 25 per cent of the dairy stock of the country is affected with tuberculosis. This is a most serious state of affairs, as tuberculosis is admitted to be a highly contagious disease and is more easily transmitted to man than to other animals from the fact that they consume the milk and flesh of these animals in a more or less uncooked condition. It is therefore a well recognized fact that tuberculosis in man is, to a very great extent, derived from diseased cattle.

And so the work of veterinary investigation goes on. We hope, at a later day, to publish reports from these various working bodies.

That the results in the curative effects of the lymph have failed to be what they were expected is no longer a doubt, and, in this connection, probably experiments in our medicine might be justifiably considered of little advantage. But it is not so much in relation to the curative good that could be obtained that the experiments ought to be made, but to solve the question of the advantages of injections of tuberculin as a means of diagnosis. To us veterinarians this is a most important subject, the difficulties of making a diagnosis by merely physical signs being, we all know, in many instances quite difficult.

It was claimed, at the beginning, that the first result observed after an injection of Koch lymph was a peculiar general reaction, which was always characteristic of individuals affected with tuberculosis, while, on the contrary, it was absent in healthy subjects. How important was this, and how valuable this reaction, if it could be depended upon! But, alas, the reports that come to the medical world from all directions seem to require the abandonment of the hope that reliance could be placed on this feature of its operation, and it appears pretty evident that the general reaction cannot be depended upon as a positive means of diagnosis, it making its appearance in some cases very appropriately, while in others the lymph remains powerless to produce it, having consideration neither for a diseased or perfectly healthy condition of the patient.

In the last *Revue des Sciences Medicales*, Dr. S. Gaillard, after reviewing all that had been written on the subject, says: "The value of Koch's method as to the point of view of the diagnosis and of the treatment of tuberculosis is, for the present, easy to appreciate. It has been proved that if the lymph has a special influence, let us say even specific, upon tuberculous nodules, it may, however, remain ineffectual on phthisic patients, giving rise to neither general nor local reaction; besides, on the contrary, giving rise to reactions, specially general, on tuberculous individuals."

These words seem to be very conclusive that the hopes veterinarians had conceived are not to be realized; but still

there may remain much to be learned. The experiments that have been, and are still carried on abroad and at home, may bring sufficient light on the subject to justify the hopes conceived at the beginning, and, with the writer just referred to, we may say, "tuberculin must leave the arsenal of the practitioner and return to the experimental laboratory, from which it made a premature exit."

PROFESSIONAL COMPLIMENTS TO A VETERINARIAN.—If there is a personal, private satisfaction in doing a good work, this is undoubtedly considerably increased where, comparatively speaking, public acknowledgment of the appreciation of this work is granted to its author. And for this reason our friend, Prof. Huidekoper, has good reason to feel proud of the action taken recently by the veterinarians of Philadelphia in showing him their appreciation of his work in behalf of the profession since he has joined its ranks. Prof. Huidekoper was recently the guest of the veterinarians of Pennsylvania at a dinner offered him by those gentlemen on the occasion of the change he has made in his new field of labor to New York City. The occasion must have been an enjoyable one, and we heartily congratulate our friend for the compliments he received on that occasion, and which none better than ourselves can appreciate, knowing all that he has done for the profession, not only in his own State, but in the country at large, and above all for the Veterinary Department of the University of Pennsylvania. We regret that the proceedings of this little ceremony reached us at so late an hour as to oblige us to postpone their publication until next issue.

PROF. F. S. BILLINGS, V.M.—Among the most recent news of interest which we have to record, that of the reappointment of Prof. F. S. Billings to the University of Nebraska, in the capacity occupied by him some time ago, will be accepted by many as gratifying. Energetic as we know him, hard worker as he has proved himself, some very interesting works can be looked for which may prove of great value in these days of bacteriology.

ORIGINAL ARTICLES.

A CLINICAL STUDY OF ODONTOMES.

BY W. L. WILLIAMS, V.S., Bloomington, Ill.

(A Paper read at the Annual Meeting of the Iowa State Veterinary Medical Association).

Fig. 3*b* represents the last inferior molar from a small four year horse, affected some two years, and having an external fistulous opening without great enlargement of maxilla. The tooth was trephined down upon and readily dislodged with the punch, but the assistant who was looking after the tooth inside the mouth allowed it to slip from his grasp and it was instantly in the pharynx, and on its road down the œsophagus, lodging at the middle region of the neck. Fearing that the tooth was sharp and jagged, we did not attempt to push it into the stomach nor even allow the animal to swallow it further, but immediately cut down upon and removed it, from an indirect result of which the animal eventually died.

The case represented in Figs 8, 9, and 10 is of unusual interest in several respects, the odontome being of unusual interest, and the checkered career of the animal fitly illustrating the vicissitudes through which a curable animal may pass.

The patient was an aged brown gelding known as Chester B, with a pacing record of 2:28½.

The earliest trace we have of this horse was about 1887 or 1888, when he was owned by Dr. Sutherland, V. S., of Sutherland and Benjamin, breeders of trotting horses at Saginaw, Mich., at which time, when six or seven years old, he appears to have been sound but, according to Dr. Sutherland, was a "puller."

We next learn of him in the hands of a Mr. Long, of same city, by whom he was traded to Mr. O. Woodworth of Bloomington, Ill., before the latter had seen him.

The exchange appears to have been consummated by correspondence and largely upon the professional opinion of Drs.

Stowe and Thwartes, veterinarians of East Saginaw, Mich., who, under date of Jan. 24, 1890, assure Mr. Woodworth that "the enlargement on the right side of face was caused by a caries of the fifth molar tooth, which we removed, and we may also say that the most of such cases make a good recovery in the course of time. The swelling of the nostril is due to Mr. Long's man using a strong solution of acid."

With this history he was presented to us in fairly good general condition three weeks later (14th Feb.) for examination, when he had a very repulsive appearance, somewhat similar but not equal to that depicted in Fig. 9. The right side of the face was enormously swollen, from the eye to the nostril; at the region of the second molar (fifth tooth) there was an opening through the superior maxillary bone about one inch in diameter, surrounded by abundant unhealthy granulations, which bled at the slightest touch. From this opening and the right nostril there was an abundant and very offensive purulent discharge. Inside the mouth, the gums on the affected side were greatly swollen, the first and third pre-molars were almost buried, but could be felt and were drawn out with the fingers. The second pre-molar could not be felt and was supposed to be out, but after several days, when the swelling of the gums had largely disappeared, it was found and taken out, like the others. The fourth and fifth teeth were out, leaving one superior molar on right side.

The other teeth throughout the mouth seemed natural and well-preserved. Those removed were free from caries, but were quite short and the fangs appeared atrophied.

A metallic probe passed into the facial opening came in contact with a rough, hard surface. The animal was secured by backing into stocks, fastening the head by a halter rope to posts on each side and with a twitch on the nose. We freely enlarged the external opening, and clearing away the debris and unhealthy granulations, came upon what was evidently a *very* large odontome. The surface of the tumor was well bared, and after over two hours of hard work with bone chisels, heavy tooth-cutting forceps and a variety of bone-execting instruments, we succeeded in removing by piecemeal an

odontome consisting apparently of pure dentine, the pieces collected weighing sixteen ounces, the largest of which are represented in Fig. 8. The cavity resulting was thoroughly cleansed with carbolized water and then, to repress the excessive granulations, was firmly packed with cotton wool saturated with carbolized oil and thickly dusted over with iodoform, and the dressing repeated daily for about two weeks.

Improvement was prompt and rapid, the unhealthy granulations disappeared, the fetor and the nasal discharge ceased, healthy granulations appeared, the facial enlargement was rapidly receding and the cavity from which the odontome was removed was filling up, when—much to our chagrin—at the end of two weeks the owner informed us that prior to bringing the horse to us he had offered him in trade (by letter) to a Pennsylvania party, who had accepted his proposition and the horse must go, and accordingly he was shipped to a Mr. Middagh at Mifflinstown, Pa., growing worse on cars from want of proper care. Further neglect seems to have rendered his condition very repulsive and Mr. Middagh, finding him useless except from trade unseen, made a sale by correspondence to Mr. Geo. W. Rice of Springfield, Mass., who bought him as “sound, clean and straight” to quote his language, and soon after delivery (May 6) had the head photographed as in Fig. 9 and then, by advice of the attending veterinarian, Dr. M. E. Chapin, Springfield, Mass., he was destroyed, and thus was brought to an end a very interesting case, which with proper treatment at the right time would undoubtedly have restored to usefulness a valuable animal.

The condition of the bones of the affected side of the head are well shown in Fig. 10, which, owing to the constant and prolonged irritation had become rarified, partly necrosed with here and there large openings which along with the large central cavity from which the odontome was removed, were filled with soft unhealthy granulations at time of death.

In class D, Aberrations of the Whole Tooth Germ, we find but one sub-class—Composite Odontomes, of which we have met with but one typical case in practice.

The patient was a well-formed, very large and vigorous

full blood French draught filly, nearly a year old, and had been noted unwell for some two or three months prior to admission to our infirmary.

The first symptoms noticed by the owner was slight dyspnœa, shown after a short run, and slight swelling over the region of the maxillary sinuses. The dyspnœa and enlargement rapidly increased until at date of admission she was barely able to walk half a mile to and from the cars. There was neither any nasal discharge nor fetor of breath. The central part of the facial swelling was superior to the normal position of the fang of the fourth tooth and, suspecting some form of dental trouble, we trephined well down at the lower border of the swelling, and passing through the ordinary thickness of bone, we came at once upon a *very* hard substance barring our further progress. In enlarging the opening and passing to one side of the hard enamel substance, we permitted the escape of about two pints of a thin, clear, pale-yellowish fluid. After freely enlarging our opening and baring the solid part of the tumor, we placed a punch against it perpendicular to the side of the face, and with several sharp blows with the mallet, broke the tumor from its attachments, but finding it too large for extraction through the already very large opening, it was broken up by the aid of tooth-cutting forceps.

This enamel portion of the odontome was very irregular and weighed about four ounces (Fig. 14*a*). Adjoining this mass of enamel was a considerable equally irregular mass of dentine, which was next removed in the same manner. A portion of this is shown in Fig. 14*b*.

We now had free access to the large cyst surrounding, from which the fluid had escaped earlier, and found that it had attained such dimensions as to invade all the sinuses on the left side, destroying all partitions and converting all into one immense cavity, completely occupied by the cyst, which had further encroached upon and occluded the left nasal passage, and, pressing hard against the septum nasi, had greatly narrowed the right nasal passage, thus producing serious dyspnœa.

The cyst was thick-walled and quite firm; it was quite free from surrounding parts except inferiorly, where the irregular mass of enamel was found, and as far as possible it was removed by gently withdrawing it by means of heavy dressing forceps.

The outside of the cyst was smooth and covered with mucous membrane, while the inner side was thickly studded throughout, except at point where enamel was found, with numberless rough pyramidal elevations one-quarter to one-half inch in diameter and one-eighth to one-quarter inch from base to apex, and formed of cementum, Fig. 14c.

After removal of the cyst the sensory branch of the fifth nerve was seen to be wholly denuded of its bony conduit, through the encroachment of the cyst, and remained loosely stretched across the large cyst-cavity, entirely bare and very sensitive. An accidental wound to this before its identity had been made out occasioned much pain and this, with the exposed condition of the nerve, rendered the animal quite sensitive and troublesome in dressing afterwards.

The same line of after-treatment as described in preceding cases was followed, resulting in prompt improvement, healthy granulations appearing over the entire extent of the cavity in a few days. In about a week the walls of the cavity were rapidly approaching their normal position, the dyspnoea was almost wholly relieved, the outward bulging of the face greatly diminished and on the twelfth day after admission she was discharged apparently on the safe road to recovery. Six weeks later her owner reported her practically well, and a year later the blemish could scarcely be noticed, except on close inspection; the filly having made an excellent growth.

While selecting this series of cases primarily to illustrate their classification and treatment, a careful study of them will indicate some of the leading errors and accidents likely to occur and assist us in formulating some general rules as a basis for action:

1. When an odontome is recognized, no unnecessary delay should be countenanced by the veterinarian, but prompt surgical treatment advised, since early treatment, aside from

the influence on the growth or vigor of the animal, very materially lessens the amount of disfiguration; or, in case of pain on pressure upon the crown of the affected tooth, causing uni-lateral mastication, we may, by long delay, have the very unfortunate extreme beveling of the teeth show in Fig. 8; or, in suppurating odontomes, as already related, especially of the lower jaw we may have death, probably from pyæmia.

2. Never under any circumstances attempt the forcible removal of a tooth until it has been clearly determined that no enlargement of the fang exists, which in being forced through the alveolus may cause serious damage to it, or to the bony palate, as has been related in the cases from which have been taken Figs. 4, 6, and 13*a*, and in Fig. 16.

3. The first step in operating on affected teeth of young horses or others where odontomes may be suspected (except in those cases like in Fig. 5 where the abnormality is clearly confined to the crown and it has been erupted) should consist in a free opening at or near the normal position of the fang of the suspected tooth. This opening having been made by a large trephine three-quarters to one inch in diameter, should be further enlarged by aid of bone-gouging or cutting forceps, bone saw, chisel or gouge, until the character of the odontome is clearly made out, and abundant room for future operations afforded. When considerable enlargement of the bones is present, the opening may be extended almost to the circumference of the enlargement, with a view to diminution of the blemish when the parts have healed. This is especially true of the small follicular cysts in connection with the superior permanent pre-molars, in which we find sharply defined hemispherical protuberances, and of suppurating odontomes in the inferior maxillæ, where there is frequently a very unsightly enlargement. In the latter case, the bulged, thickened bony walls of the abscess may advantageously be cut away until the normal line of the inferior border is reached, although this cutting away may leave an opening into the abscess cavity five or six inches in diameter, after which, as the healing process takes place, the widely separated walls may more readily approach each other and will leave far less

blemish than by using more conservative methods ; and it also favors rather than retards the rate of recovery.

4. The removal of the odontome. Pure follicular cysts resting in the facial sinuses need only to be punctured and the contents allowed to escape, after which the cyst is to be carefully removed by grasping with dressing forceps and drawing it out cautiously, avoiding tearing as far as possible. They usually have no such direct connection with the teeth in the alveoli as to so expose the tooth germ as to make the destruction and removal of the tooth necessary. The same may hold true of composite odontomes, as in case of Fig. 14, and in some cases of compound follicular odontomes, even where suppuration of long standing is present ; in fact in any class the odontome may be so slightly connected with teeth in their normal position in the alveoli as not to jeopardize their vitality if due care is observed while removing the offending parts. In all such cases and in others before the intimate connection between the odontomes and the tooth in the alveolus has been ascertained, the veterinarian should proceed warily. Whether a tooth is to be sacrificed or not, when the odontome is well bared and any cystic fluid evacuated, the harder parts, consisting of enamel, dentine or cementum, should be comminuted sufficiently to permit its being readily removed. This comminution is best effected by means of the bone chisel and mallet or by various shaped bone or tooth-cutting forceps, according to size, form, etc., of the odontome, and the pieces are most readily detached from surrounding parts by the punch and mallet. The tooth, if affected, should be comminuted until all enlargement of the fang has certainly been removed, and in case of the fifth and sixth superior teeth, all available parts of the tooth should be so comminuted before attempting to force the tooth out, as it permits the punch to be placed at a better angle and renders the final part of the removal of the tooth far less difficult.

Every part of the alveolus and cavity occupied by the odontome is then to be carefully searched in every part for detached pieces of tooth, and all carefully removed. This can usually be easily affected by means of strong dressing

forceps, while in other cases we have found, especially in suppurating compound follicular odontomes, that we sometimes have great difficulty in dislodging firmly adherent flat pieces of cementum or dentine, from the walls of the pus cavity, and in such cases we find the best means to consist of placing a steel punch against the adherent piece perpendicularly and then giving it a short, sharp blow with the mallet, which by causing a yielding of the living walls, detaches the more unyielding tooth-substance, when it can be readily removed with the aid of forceps. The free use of a four-tenths per cent aqueous solution of carbolic acid or one-twenty-fifth per cent of corrosive sublimate with sponge and syringe, greatly facilitates the operation and guards against septic accidents.

5. Unless free dependent drainage is afforded through the alveolus into the mouth or otherwise, this should be provided for by cutting through the wall between the sinuses into the nasal passage and a sufficiently large piece removed to ensure its remaining open. If, through pressure of pus or a cyst, the wall between sinuses and air passages has been pressed against the septum, closing the orifice of communication between sinuses and nostril, the fingers should be passed through the orifice, and the adhesions with the septum broken down. This may be aided by means of any suitable instrument passed up the nostril. Should these means fail to retain the displaced parts in their proper position, a bistoury may be introduced between the septum and wall and the latter divided downwards toward the nostril, as far as desired, and if need be a portion excised, when the redilation of the air passage may be further facilitated by a suitable tampon introduced either from above or below.

6. The dressing and after-treatment should consist of thorough washings daily with a four-tenths per cent carbolic acid solution, careful search for remnants of tooth tissue for several days and plugging alveolus, odontome cavity and external wound with pledgets of cotton or tow, saturated with carbolized oil and for a few days at least, heavily dusted over with iodoform. After four or five days, when the fetor has disappeared, the iodoform may be discontinued, and the plug

not so tightly impacted, but the alveolus must be kept well filled until closed up, to prevent the entrance of food into it. Should the external wound close too rapidly it may be enlarged by excising the soft granulations by passing a bistoury around its circumference. If the external wound is of such a nature that the dressing cannot well be retained, a suture of silk tape or silver wire passed through the edges of the wound and across the opening, may be resorted to with advantage, especially in cases of large cavities in the lower jaw.

In securing the animal it should be confined in stocks in the standing position for operations on the superior maxilla, almost without exception, while for the lower jaw the operator will usually find it advisable to cast the patient. In such extensive odontomes as those illustrated by Figs. 8 and 14, requiring a surgical struggle of two or three hours, the animal is manifestly far better for being allowed to stand, while the operator also is placed in a better position for his work.

Anæsthetics might be beneficially used in some cases of odontomes of the inferior maxilla, but rarely if ever in those of the superior.

The instruments required for operating are extremely various, including syringes, probes, knives, trephines, bone forceps of varied shapes, tooth-cutting and extracting forceps, bone chisels, gouges, punches and mallet, etc.

The punches should vary in size and design, but all should be made of well-hardened steel, be well polished, and have the distal ends (which are to be placed against the odontome) deeply concaved, with sharp edges, that slipping may be well nigh impossible. This concave end should be about three-quarters of an inch in diameter at the most, which should be somewhat reduced in size for a short distance to prevent its becoming impacted in the alveolus, or other parts. A slight bend about two inches from concave end generally adds to convenience and usefulness. The total length should be eight to ten inches and the distal should be slightly convex. The best mallet we have been able to find is one of wood, with compressed sole-leather ends, which will not split but always affords a firm, smooth striking surface.

Our prognosis in case of odontomes is almost without exception, *very favorable*. No class of surgical operations can well offer safer or more satisfactory results if the operation be properly performed, the errors we have pointed out obviated, and the after-treatment properly carried out.

One point of importance should not be overlooked—the operation should *always* be made on the veterinarian's premises, where all needed instruments and appliances will be at hand, as it can never be told just what will be needed until the work is done. Then the patient should by all means be left in the *immediate care* of the operator until the wound is granulating at every part, as it is next to impossible in many cases, to find and remove, at the time of operating, *all* the detached or diseased fragments, so that they need to be searched for daily for three to six days. A reflecting lamp, by throwing a strong light into the affected cavity, will greatly aid in detecting these overlooked fragments.

EXPLANATION OF PLATES.

Fig 1.—Multilocular cyst, from a two-year-old colt.

- a.* Fourth superior molar recently erupted, and
- b.* Fifth superior molar, not yet erupted, both showing by wires inserted, openings from table to fang between the layers of central inversion of enamel.
- c. d. e. and f.* Cyst walls from the fang of fourth molar.

Figs. 2, and 3. Second superior pre-molars from two-year-old colts, which had small follicular cysts in connection with their fangs.

Wires passed through the teeth show openings from table to fang between central inverted plates of enamel, as in Fig. 1.

Fig. 5. Cementoma of corner incisor (inferior).

- a.* table surface of tooth.

Fig. 4. Cementoma of third superior molar from four year-old-mare, affected two years.

- a.* Cementum tumor on inner side of tooth.

Fig. 6. Compound Follicular Odontome (suppurating) .

- a.* Antero-posterior view of tooth, showing its beveled condition from unilateral mastication, also the greatly enlarged condition of the fang.
- b.* View of the inner side of tooth (wearing surface) showing wire passed between the inverted enamel plates, constituting a free communication between the abscess and the table surface.

Fig. 7. Detached pieces of dental tissue from the abscess of Fig. 6.

- a.* Irregular masses of enamel and dentine.
- b.* Piece of cementum from same.

- Fig. 8. Large pieces from a Radicular Odontome, weighing sixteen ounces, removed from the right superior maxillary region of an aged pacing horse, Chester B., 2:28½.
- Fig. 12. Radicular Odontomes of fourth superior molar with early longitudinal splitting, from a three year-old colt.
- Fig. 13. *a.* Radicular Odontome of fourth superior molar with external fistulous opening, from an aged mare.
b. Small Radicular Odontome of last inferior molar from a three year old horse.
- Fig. 9. The head of Chester B., three months after the removal of the odontome shown in Fig. 8, showing the odontome cavity and surrounding parts invaded by unhealthy granulations. From a photograph.
- Fig. 10. Right superior maxilla of Chester B., showing the large cavity previously occupied by the odontome partially shown in Fig. 8.
- Fig. 14. Composite Odontome, from the region of the fang of the fourth superior molar from a one-year-old filly.
- a.* Irregular mass of enamel. *b.* Dentine and cementum. *c.* Internal face of cyst studded with denticles. *d.* External surface of cyst, covered with smooth mucous membrane. *e.* Mass of cementum papillæ from interior of cyst.
- Fig. 15. Longitudinal splitting of a tooth from lack of cementum between the inverted layers of enamel.
- Fig. 16. Oro-nasal fistula from destruction of a part of the palatine bone, the result of an odontome.

KOCH'S METHOD WITH TUBERCULOSIS

AND THE EARLIER USE OF CORRESPONDING PRODUCTS IN OTHER CONTAGIOUS DISEASES.

BY JAMES LAW, F.R.C.V.S., Cornell University, Ithaca, N. Y.

(A Paper read before the New York State Veterinary Medical Society).

Koch has at last made known the source of his "lymph." It may be called a solution, in a mixture of equal parts of water and glycerine, of the products of the culture of bacillus tuberculosis, or of the growth of tubercle. Stated more distinctly still, it is the poisonous chemical products of the growth of bacillus tuberculosis, or a part of such products. The fact that it is insoluble in alcohol suggests that it is more probably a ptomaine or organic alkaloid of fermentation, than a toxalbumin. To many, doubtless, the revelation will hardly be a surprise. The operation of the poison alike on the active local tubercle and on the tuberculous system, suggested as a factor the poisons normally acting in tuberculo-

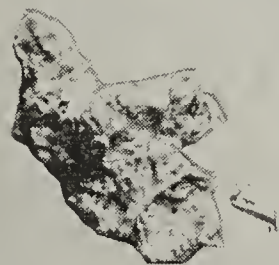
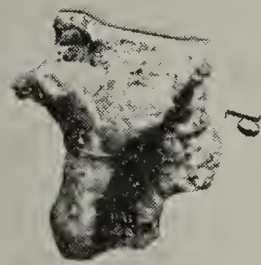
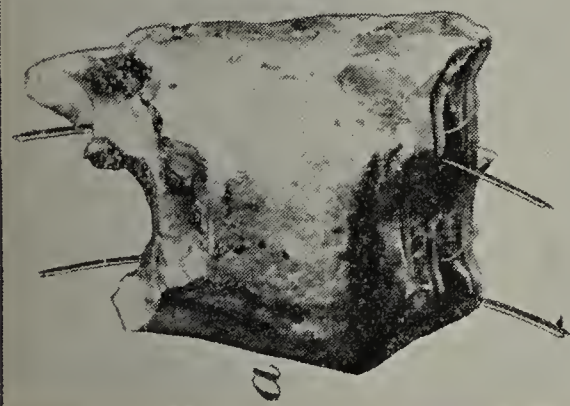


Fig. 1.

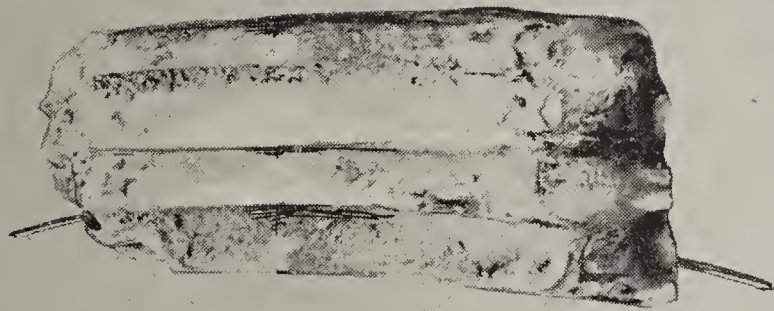


Fig. 3.



Fig. 2.



Fig. 4



Fig. 5.

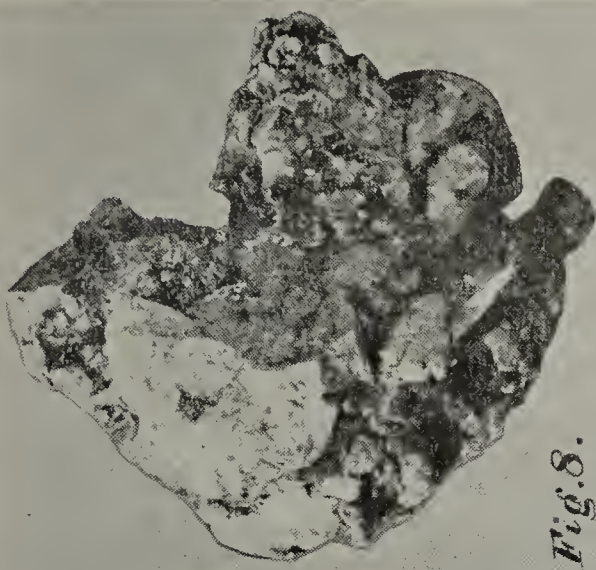


Fig. 8.

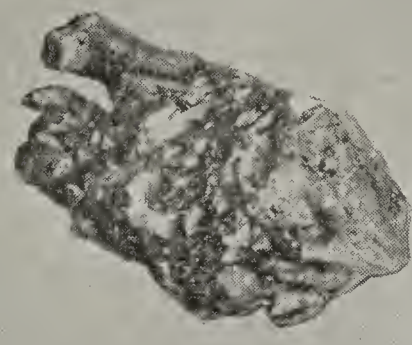


Fig. 8.

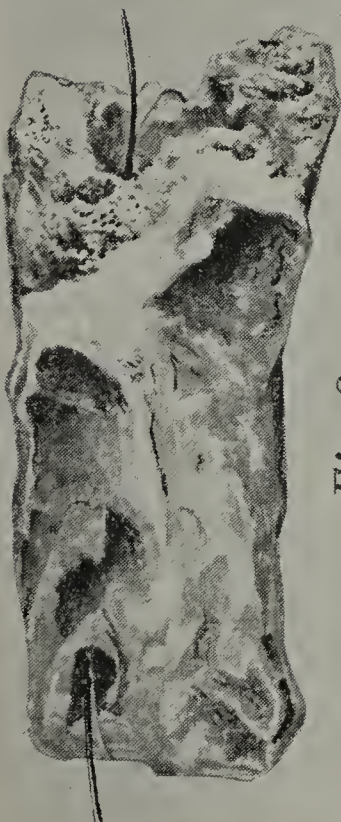
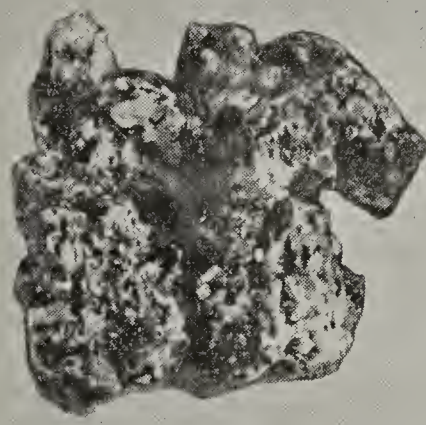
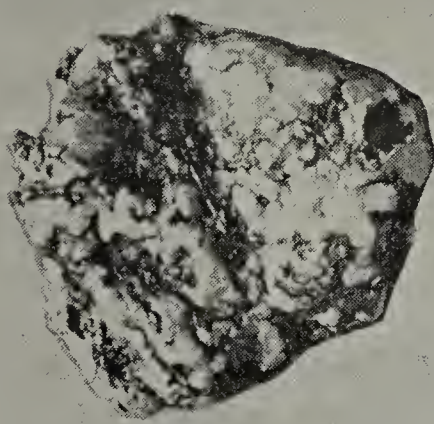
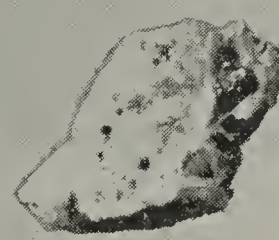
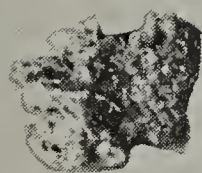
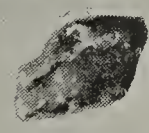


Fig. 6.



b



a

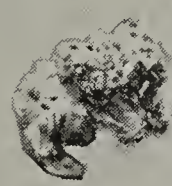


Fig. 7.



Fig. 12.





Fig. 10.



Fig. 16.



Fig. 9.



Fig. 14.



Fig. 15.

Fig. 13.

sis, and the analysis by the Viennese chemists greatly strengthened this suspicion.

Now, however, that surmise is changed to certainty, and that the active agent in Koch's "lymph" is known to be chemical poison or poisons produced by the bacillus in vital processes, the question at once arises, have these products ever before been used in medicine? To this the answer is emphatically, yes! The evidence of this I shall give below. Meanwhile let me say that nature herself displays this process in the great class of germ diseases in which the microbe—the living parasitic cause of the disease—does not live in the blood, but confines its attack to one circumscribed area, yet confers an immunity from the attacks of the disease upon the entire system. As instances of this may be adduced cow-pox and lung plague, and mild cases of local anthrax. All the modes of conferring immunity by inoculating weakened or partially devitalized virus, or single germs of the more potent virus, or small doses of virus into the blood, are in the main methods of availing of the same principle. The weakened germ and the single germ alike perish in the seat of inoculation, by reason of their inability to struggle successfully with the more numerous and more potent tissue nuclei, and the migrating blood cells. The germs thrown into the circulating blood are, in the case of certain diseases like lung plague, similarly overcome and devoured by the myriads and myriads of actively moving blood globules, and thus fail to plant colonies in the tissues, and thereby start local disease. What, then, is it, which, permeating every tissue and entering every cell and nucleus, confers upon the whole body a subsequent immunity from the attacks of the inoculated microbe? Manifestly the chemical poisons, the products of the microbe's life, to which these tissues and cells become habituated and insusceptible. Those who avail of these methods may not have recognized the full value of the chemical poisonous products, in the absence of the living germs, hence they have not felt justified in leaving out the dangerous germ itself, yet their results are undoubtedly due to the soluble products which premeate every part of the system, and not directly to

the germ which is confined to the narrow area of tissue where it was inoculated, or, in the other case, to the circulating blood into which it was thrown. More than this, as I hope to show later, the ptomaines and other poisons have been experimentally used in medicine—apart from the living germs—for at least eleven years past, so that the separation of these chemical poisons from their living bacteridian sources and their employment in medicine is not a new thing, nor was the justly famous Koch the first to use them apart from the living microbes for this purpose.

The new departure now made by Koch is not, therefore, the separation of the ptomaines and tox-albumins from the living microbes for medicinal use—that had already been accomplished—it is rather the application of such separated chemical poisons to the cure of already existing disease. Koch's departure has been the introduction of these agents into the field of therapeutics,—they had already been introduced into prophylactics.

The only apparent exception to this is in the method of Pasteur, for the protection of the individual bitten by a rabid animal. But this is no real exception, because, first, the Pasteurean inoculations for rabies are not made with the chemical products alone, but with these plus the microbes, at first of a low vitality and potency, and then day by day of a stronger and stronger quality: 2d, The Pasteurean inoculations for rabies and prophylactic being intended to habituate the brain and other nerve centers to the action of the soluble chemical poisons, while the living microbe is still confined to the region of the bite, so that such centers shall have acquired an insusceptibility before the living germ can reach them in a viable condition. The tardy progress of the microbe of rabies to the nerve centers is based on the fact that the blood is highly inimical to the life of this germ.

From the standpoint of this role of the ptomaines, etc., I propose to shortly canvass Koch's method and some of its precursors, and to inquire into a number of the successive steps through which the science of medicine has advanced to its present state in this line of prophylaxis, and, it must now

be added, of treatment. With this in view, it may be well to trace some of the leading landmarks in the gradual discovery of those poisonous products now known as enzymes and ptomaines. Strangely enough, the belief in chemical poisonous products antedates by many years the recognition of living germs as the cause of disease. Poisoning by decomposing meat and fish had long been a familiar occurrence when, early in the eighteenth century, Haller experimented by injecting watery extracts of putrid material into the veins of animals, and found that death resulted. In 1820, Kerner, investigating the question of poisonous sausage, came to the conclusion that the toxic principle was a fatty acid combined with a volatile principle. Others pursued similar investigations, but it was only in 1856 that Panum positively demonstrated that the poison was a chemical product, which was soluble in water and capable of filtration from other and insoluble bodies. He found in the decomposed flesh of the dog a toxic product, soluble in water, insoluble in alcohol, non-volatile and indestructible by boiling. Of this chemical poison, 0.012 of a germ proved nearly fatal to a small dog. Panum, however, went further and succeeded in isolating another chemical poison from the putrid meat which was easily separable from the first by the fact that it was soluble in alcohol. This alcoholic extract injected into a dog's jugular threw him into a sleep for twenty-four hours, after which he awoke in apparent health. To Panum, therefore, we owe the first recognition of two classes of products of bacteridian growth, which act on the animal system as chemical poisons and which have now come to be recognized as ptomaines (cadaver), which are basic or alkaloidal and toxic albuminoids of a non-basic nature.

Following Panum, came Weber, Hemmer, Schwenninger, Bence-Jones, Depre, Marino-Zuco, Bergmann, Schmiedeberg and others, and the true basic or alkaloidal nature of the product which is precipitated by alcohol, established.

The poisonous property of these chemical products, even after a prolonged exposure to heat, which must have killed any living germs, for a time antagonized the theory of

causation by living germs, and so late as 1879 such an accomplished observer as Dr. Lewis argues for the absence of living germs in septicæmia on the ground that septicæmia poisoning can be produced by these purely chemical products.

But the permanence of this theory was impossible. Chauveau, Bert and Toussaint showed in the case of anthrax that the filtration of the virulent liquids through an unglazed earthenware filter rendered the filtrate non-infecting, while the solids retained in the filter retained their full potency. They further demonstrated that an overdose of the filtrate was speedily fatal, killing the animal in twelve hours, while a dose of the solids left on the filter did not kill until after thirty hours. Here we had at once the prompt poisoning by an excessive dose of the chemical poison, and the slower poisoning by the implanting of the anthrax germ and the slow production and increase within the system of the same chemical poisons as the germ grew and multiplied. Koch has obtained similar results with putrid flesh inoculated on mice.

To those who had been following the course of experimentation, the field was now clear for a further advance, and such further advance had, indeed, become inevitable. A number of facts and observations testified that it was to the chemical poisons we must look for the direct toxic agents, while the microbes acted mainly as the producers of such deleterious chemical products. In many cases like cowpox, the microbe might be confined to a circumscribed area of tissue, but the soluble chemical products pervaded the whole system and rendered every tissue immune from future attack. In some cases, indeed,—as in cattle lung-plague—the blood had been proved to be fatal to the germ, while this remained confined to the part, tail or lung, where it had been implanted, but, in case of survival, no tissue in the body would thereafter furnish a favorable field for its inoculation and growth.

It was inevitable that the next step should be taken—that of applying the devitalized chemical products of the microbe of a specific disease to render the system proof against such disease; and it was natural that Toussaint should be the first to enter the field. Devoted as he was to this line of experi-

ment at government expense in a national school of veterinary medicine, he had satisfied himself that the survivors of an attack of anthrax did not contract a second attack when exposed or inoculated. He, therefore, in 1880, instituted experiments on sheep by heating the virulent anthrax fluids to 55° C., for from ten to fifteen minutes, and with this product inoculating the animals to be protected. In a short time he had ten animals thus inoculated, that resisted all ordinary inoculations with anthrax virus. Then a crucial experiment was instituted at Alfort, in which twenty sheep were inoculated with his heated anthrax liquids, and unfortunately four of the number died of anthrax: Sixteen survived and these after proved insusceptible to anthrax. The partially unfortunate result and Tous-saint's increasing ill health would appear to have deterred him from further advance in the same line, and no other European observer seemed then to appreciate the value of his results.

Experiments were, however, being made in the same direction in America. Dr. Salmon was, in 1880, experimenting on fowl cholera and I was dealing with swine plague, both for the National Department of Agriculture. Each, independently of the other, undertook to test the protective action of the ptomaines. Dr. Salmon's observations on the chicken disease led to negative results, the ptomaines being either volatile or destructible by heat.

In my experiments with swine plague I was more fortunate. But to show my views at that date and the results I obtained I shall quote from the Department of Agriculture Report on Contagious Diseases of Animals. 1880-1, pp .135-146.

“BACTERIA INTOXICATION AND BACTERIA INFECTION.

“In all diseases caused by microphytes, there are two associated but distinct deleterious agents to be taken into account: 1st, the organism which is introduced from without and multiplies in the body of the patient; 2d, the chemical products elaborated by the growth and increase of the imported organism at the expense of the vital liquids. The two have been aptly named bacteria infection and bacteria intoxication. Each may be injurious and even fatal, yet each has

its special mode of action and its limitations, so that we can estimate with a reasonable amount of certainty the probable results in the two cases.

“In bacteria infection the self-multiplying organism is introduced into the body, and if it finds a suitable field for its growth it undergoes an indefinite increase, and may undermine the health or destroy life in one of various ways ; for example by accumulating in the capillaries, arresting the flow of blood and abolishing the functions of vital organs, or leading to local abscess or gangrene ; by abstracting oxygen and other essential elements from the blood, and resolving this vital fluid into a poisonous in place of a life-giving stream ; or by reproducing itself in myriads, elaborating a vast amount of noxious chemical products and killing by poisoning. The bacteria intoxication or poisoning, on the other hand, is effected directly by the products of the growth of the bacteria, or in other words, by a chemical compound incapable in itself of reproducing or increasing its substance. The respective powers and limitations of the two poisons may thus be mapped out with great clearness.

“It is manifest that from bacteria infection may be derived all the evil results of bacteria intoxication, in addition to certain pernicious actions peculiarly its own. The germ being a living organism, with limitless powers of growth, it is manifest that apart from the power of the system to support it, there can be no bound to the amount of chemical poisonous product it may generate, and thus to its own special work of destruction of the essential constituents of the blood, deoxidation of the vital fluid, plugging of vessels, local abscess and gangrene, it must ever add the poisonous influences of its purely chemical products. But it has its limitations as well, which do not belong to its products. In several bacteridian diseases the system will not sustain nor nourish the bacteria with the same readiness a second time, if at all. The system that has once sustained an attack does not readily succumb to the same again. An incompatibility or antagonism has been established between the system thus protected and the bacterium, and henceforth the system may be repeatedly inoculated

with the bacterium with the most perfect impunity. This cannot be said of the chemical products of the bacteria growth. These, like all chemical poisons, will act again and again upon the same system with little difference in effect and, if a partial tolerance is acquired, it can only be to a limited extent and after long exposure to their action, as tipplers acquire a tolerance of alcohol, or opium or arsenic-eaters of these respective poisons. Kill the microphytes in the infecting bacteria liquids and the chemical products will act in exact ratio with the dose administered, and no amount of experience with the poison will prevent an excessive dose proving fatal. The action moreover will be prompt, and if it does not produce fatal results at an early stage, it will gradually subside, for since the poison cannot multiply itself its effects must steadily decrease with its elimination from the system. With bacteria infection, on the other hand, the evil effects must be somewhat delayed to allow the reproduction of the germ and the production of the chemical poison, and thus the disorder of the system will undergo a progressive development. In another respect we may conceive of bacteria infection being limited in its evil results. If the bacteria increase slowly, the system will be likely to become somewhat habituated to the influence of the poison and insusceptible to it, so that by the time the disease reaches its height the system may be able to bear with impunity a quantity of the poison that it could not have tolerated had the same amount been introduced suddenly and before the economy had become inured to its influence.

“ In illustration of the separate action of the bacteria and their products Koch's experiments on mice with putrid fluids are most instructive. * * * Koch injected putrid liquids under the skin of the mouse, and found, when the amount used had been excessive, that the mouse died in a few hours from the effects of the chemical poison, and that not a bacillus could be found in the blood within the vessels. If, on the other hand, a minimum amount of the putrid liquid was used, as by making a slight scratch with a lancet, the tip of which had been dipped in the liquid, and if the mouse survived the

primary danger of death by the chemical poison, it died in the course of about two days of bacteria infection and the blood was found swarming with bacteria. Similarly Chauveau found the Algerian sheep, that are naturally insusceptible to anthrax and which successfully resisted inoculation with a minimum amount of the virus, fell victims to the disease, if an excess of the poison were injected under the skin, or if a second and third inoculation were practiced before the effects of the first had passed off. Finally Cossar-Ewart, and Burdon-Sanderson found that when anthrax liquids had been devitalized by exposure for some time to compressed oxygen (12 atmospheres) and when the germs had lost their power of propagation and increase, the fluid still proved injurious, and even fatal to animals on which it was inoculated. With the vital germ destroyed these evil effects could only come of the remaining chemical poisonous products, which retained their original potency.

“My own experiments with the virus of hog-cholera tend to establish the same fact in that disease. When I had subjected the virulent fluids for an hour to a temperature oscillating between 130° and 140° F., and then inoculated them on the pig, I found that the result was a certain amount of constitutional disorder and ill health, which did not, however, go on to a fatal issue. * * * Similarly when I injected into the system large quantities of the virulent fluids, I found that death took place almost without exception, even in animals that had resisted ordinary inoculations. Of this mortality we may find an explanation in the febrile state of the system induced by the presence of the chemical poisons. * * * It is not the increase in the number of the bacteria alone, nor the access of fresh, and therefore more potent germs, that have the evil effects, for in the infected system there is practically no limit to the multiplication of the bacteria, and these, in place of being weakened, are often rendered more potent by passing through a succession of animal systems. * * *

“‘Is future protection secured by the action of the chemical products alone, or is the presence in the system of the bacteria essential?’ Under this head are discussed the doctrines of immunity by elimination of systemic products necessary to

feed the microbe; by the deposition in the tissues of poisons inimical to the microbe, and of condensation of the lymph channels and glands, the first two being contradicted by the growth of the bacteria in the bouillon made from the flesh of an insusceptible animal, and their growth in a flask charged with their chemical products, provided fresh meat infusion is introduced. The third theory is disproved by the fact, that different bacteridian diseases, all alike resulting in such condensation of lymph channels, are not mutually vicarious of each other. The doctrine of physiological resistance is shown to agree with all the facts and the immunity of the calf whose dam has passed through the bacteridian disease in the latter period of the gestation is especially dwelt on as evidence.

“ This view is further strengthened by the fact that though an animal that has acquired an immunity from a specific disease, afterward produces offspring which are susceptible to the disease in question, yet it has been shown in the case of anthrax that, if such immunity on the part of the parent has been acquired by a non-fatal attack of the affection during advanced pregnancy, the preservative effect is extended to the foetus as well. Here the foetus has advanced beyond the condition of an ovum, or of simple embryonic cells or tissues, and is already well formed, with all its differential bones, muscles, tendons, brain, nerves, vessels and viscera. The nuclei presiding over the growth of these different structures are henceforth fixed in their powers, and any habitude impressed upon them may now be permanently preserved just as it is in the adult animal.

“ This consideration serves to fortify the doctrine that the immunity from a contagious disease acquired by a first attack is due to a habit, or acquired powers of endurance or resistance on the part of the living cells or nuclei of the animal body. This better accords with and explains observed facts, and is liable to fewer objections than any theory that has come under our notice. * * *

“ To return to our question. Do the observed facts accord best with the idea that protection is acquired by the action of the chemical products only of the bacteria, or is the

presence in the system of the bacteria essential? As the question appears to us everything serves to support the first conclusion. * * * The facts attending the acquired immunity of the advanced but unborn offspring of an anthrax mother seem to be almost conclusive on this question. The blood of the dam (cow) may be swarming with bacteria, but these have never been found in the blood of the foetus. It is only reasonable to conclude that they have never entered the body of the foetus, or if otherwise, that they have perished very soon after they entered. The chemical products, on the other hand, being soluble in the vital fluids, presumably enter the foetal system along with the maternal secretions. The offspring, when born, proves refractory to anthrax, so that there is the strongest presumption that it has been fortified by the action of the chemical products of the anthrax upon its system before birth. In this case immunity cannot well have resulted from any action of the growing and multiplying bacteria on the blood or living tissues, for the evidence is all opposed to their presence, at any time, in the foetal system, much more to their growth and propagation there. Yet here, unquestionably, the disease in the mother has produced an insusceptibility in the foetus, such as would occur had it been itself the subject of the disease. It follows almost of necessity that the introduction into the system of the chemical products of the bacteria is equivalent in a protective sense to the introduction of the bacteria themselves. But the mere chemical products cannot undergo increase in the system; therefore we can graduate the dose of these as safely as we can a dose of opium or rhubarb.

“With this presumptive evidence we are prepared to study the direct results of the introduction into the system of the chemical products of anthrax and swine-plague, made with the view of securing an insusceptibility to these respective diseases in the future.”

Here follows a record of Toussaint's experiments with anthrax, which need not be repeated.

MY RESULTS WITH SWINE-PLAGUE.

“A pig was injected with one drachm of virulent swine-

plague blood, which had been repeatedly heated to 130°, 150° and 200° F., and a month later with an equal amount of virulent blood, which had been raised to 130° F. for thirty minutes, and the day following for three hours. This caused some loss of appetite and appearance of ill health, but no very appreciable fever. Thirteen days after the last operation this pig was placed in a small pen with a pig suffering from swine-plague, and at intervals of a month was twice inoculated with the virus of swine-plague, but all without evil consequence.

“Another pig was injected with a drachm of the mucus-covered fæces of a pig suffering from swine-plague, the infusion having first been filtered and heated for one-half hour to 130° F. until all movement of the contained bacteria had ceased. As in the other case, there was some evidence of ill health, but no material fever, and on the thirty-eighth day the subject was placed in a small pen with a sick pig. Afterward, at intervals of a month, it was inoculated with (swine-plague) virus, but successfully resisted, and maintained good general health.

“A third pig was injected with a drachm of pork infusion, which had swarmed with bacteria resulting from an inoculation with infusion of putrid maize. Before inoculating upon the pig the pork infusion was heated to 140° F. for three hours in succession. There resulted some derangement of health, slight fever, and a local swelling in the seat of injection. When this had subsided, on the fourteenth day, the pig was placed in a small pen in company with a diseased one. Nine days after she had a sharp attack of swine-plague, which lasted eighteen days and led to much loss of condition. Later, at intervals of a month, she was twice inoculated with active virus of swine-plague, but on each occasion without any further ill result.

“On the last occasion of the inoculation of these three pigs a fresh pig was inoculated with the same virulent matter, which caused considerable fever, with a temperature varying from 104° to 106° F., but from which the subject finally recovered.

“Here, then, we have two pigs protected from the noxious

action of the swine-plague virus, by being first brought under the influence of the chemical products resulting from the growth of this virus in the system. We have, further, another pig treated in the same way with the products of an ordinary putrefactive fermentation in a pork infusion, which had been similarly devitalized by heat, but this fails to secure the same immunity, and this pig suffers severely from swine-plague when made to cohabit with a victim of that disease. Later, this pig and the two others successfully resist two successive inoculations with swine-plague virus, while a fourth pig inoculated with this same virus sustains a considerable, but not a fatal attack.

“The experiments, it is true, are limited in number and liable to the objection that the results may have been accidental coincidences, yet, so far as they go, they support the theory that the chemical product of the swine-plague germ, when deprived of its living microphytes, affects the system so as to render it for the future insusceptible to the attacks of such germs. When taken in connection with the fact that swine-plague rarely recurs in the same individual, that, as in the case of other diseases that attack the same animal but once, the most rational explanation is that it is the deleterious products of the disease germ and not the germ itself that affects the system so as to secure this immunity; and finally, considering that in the closely allied disease of anthrax Tous-saint has secured a similar insusceptibility by an identical process, it is altogether reasonable to suppose that we are here furnished with a system of prevention which, if carried into general practice, would reduce our present losses from swine-plague to a comparatively insignificant figure.”

The report goes on to show the danger of popularizing this method, since all the fatal diseases of hogs vulgarly but mistakenly known as hog-cholera would be resorted to for the protective ptomaines, with unsatisfactory results. Also that protection from all these varied fatal swine diseases would be vainly sought by the use of the ptomaines of swine-plague. Then follow summaries of needful precautions and of the manifest advantages and disadvantages of the method.

PRECAUTIONS TO BE OBSERVED.

“ 1st. See that it is the genuine swine-plague that is being dealt with. This is equally necessary as to the disease to be prevented and as to the virus which is to be devitalized for preventive inoculation.

“ 2d. The virulent fluid to be devitalized may be the blood of a diseased animal, or the liquid exudation into a diseased organ, including the lumen of the bowel. In such cases it is best taken at the height of the disease rather than from a partially convalescent animal, in which the virus may have disappeared and the structural changes only may have been left. If from a cultivation in pork infusion, that should have been prepared with all due precaution against the introduction of air bacteria, and with access to air, but which air should not much exceed one-fifth of its bulk.

“ 3d. In exposing this fluid to heat, that should be carried to 140° F. and retained at that temperature for an hour or more, until, in short, all indications of life in the contained mycophytes have ceased.

“ 4th. Swine to be operated on must be kept apart from all diseased hogs, infected places and objects, for with the presence of the living germ in the system the injection of the devitalized chemical products only tend to aggravate the attack. For the same reason all inoculated animals showing symptoms of a severe attack, and presumably suffering from bacteridian infection, in place of the simple intoxication with the chemical products, should be at once removed from the herd operated on.

5th. “ In inoculating the devitalized chemical products, the injection of a small quantity at a time and its repetition at intervals of three days or a week promises to be safer and more effectual than one large injection. The injection of ten or twenty drops at a time, and its repetition once or twice, would probably secure a greater immunity with less loss of condition and progress than if a large amount were introduced at once.

“ 6th. The animals operated on should be carefully guarded against infection for three weeks after the last injection of the

devitalized virus. The presence of the chemical poison in the blood and the attendant constitutional disturbance invites rather than debars the growth of the plague germ; hence the latter must be excluded until the former has been entirely eliminated. For the same reason the free use of disinfectants in the operating yards and buildings will be of the utmost value. So will every conceivable precaution against the introduction of disease germs through accidental channels, as by other animals, by the pork, stolen by dogs, as carried by men, etc.

ADVANTAGES PROMISED BY THIS METHOD.

“1st. It offers immunity from a fatal disease by a method which does not entail the propagation of the living germ in the system of the animal to be protected.

“2d. It avoids the risk of the preservation, amplification, diffusion or increase of potency of the disease-germ, all of which contingencies are possible in inoculation with a mitigated virus.

“3d. It does away with the necessity for an exhaustive disinfection after the animals have been inoculated and have recovered from its results.

“4th. The dose of the devitalized chemical products can be so graduated to the strength of the animal that there will be no risk of a fatal result. When once the mitigated living germ is introduced there can no longer be any certainty that it will not reproduce itself to a dangerous extent, or that, owing to the special condition of the system or of its surroundings, it may not suddenly assume its fatal type; but with the devitalized chemical products we can graduate the dose so as to secure as great a certainty as in the case of a dose of castor oil or epsom salts.

“5th. The system can be habituated to the poison and fortified against it by a succession of small doses, no one of which is at all dangerous in itself; whereas if a living germ were once introduced, though of mitigated power, it may increase so as to develop a power that is altogether unexpected.

DISADVANTAGES AND DRAWBACKS.

“ These are few apart from the certainty that, if largely resorted to, it will be misapplied by many, to other diseases than the genuine swine-plague, and will thus fall into disrepute.

“ It can do no good, but only harm to animals that are already infected, as it can only add to the deleterious products with which the germ is charging the system.

“ Its effect can only be evil if the subjects are allowed to become infected before the chemical products have had time to fully affect the system, and to have become eliminated. If this is neglected, and early infection is allowed it can only add to the mortality.

“ There is the additional disadvantage that to secure the protective products, the production of a virulent germ must be kept up either in the bodies of a successive series of diseased pigs or in an infusion of pork. The slightest carelessness with regard to the seclusion of these fields of poison, or as to the disposal of their products, may easily become the occasion of a spread of the worst type of the plague among unprotected animals.”

I have quoted thus at length to show that at that date it was with me no mere chance suggestion but a settled conviction, based on my own successful experiments and the long series of experiments by others, which led up unmistakably to this conclusion. And this at a time when Koch, whose experiments on mice had directly indicated the principle availed of, had not yet apparently grasped the true significance of the ptomaines in conferring immunity, and when Toussaint, who was the first to apply the principle, had been nonplussed by the unlooked-for results of the Alfort experiment, and led to conclude that his former successes depended on a retained vitality in the virus employed.

In the Department of Agriculture Report for 1882 Dr. Salmon again records his lack of success in this method in chicken cholera and, while accepting the principle that immunity is naturally secured through a power or resistance ac-

quired by the living tissues by continuous exposure to the action of the poisonous ptomaines, he specifically denies the possibility of any profit from the use of small doses of the latter. On page 310 of the Department Report he says: "That this method was entirely inefficient, however, was completely demonstrated, and the conclusions of Toussaint and others shown to depend on wrong interpretations of the facts observed."

DR. SALMON'S SUCCESS WITH SWINE-PLAGUE.

Dr. Salmon seems to have returned to this method in December, 1885. In a paper read before the Biological Society of Washington, Feb'y 20th, 1886, and contributed by Drs. Salmon and Smith, these gentlemen record their experiments on six pigeons with swine-plague virus sterilized by heat (50° C. for ten minutes). One pigeon (No. 8) which was infected with 8 cc. of the heated culture fluid, and fifty-one days later it was inoculated with 75 cc. of strong swine-plague virus, with the result that it died in forty-eight hours. A second pigeon (No. 10,) was injected with 4 cc. of the heated virus, and on three subsequent occasions at intervals of twenty-eight, eight and eight days it had an inoculation of 15 cc. of similar heated virus, and on the seventh day succeeding the last injection it had an injection of 75 cc. of strong virus, but remained well. The other pigeons had injections of 15 cc. of the heated virus on three occasions, with intervals of eight days, and a third had two injections of the same amount with an interval of sixteen days, and seven days after the last each was injected with 75 cc. of strong virus, but all remained in good health. Finally a check pigeon which had not been injected with the heated virus was the same day with five others injected with the same amount (75 cc.) of strong virus and died in twenty-four hours. They thus sum their conclusions:—

"1st, Immunity is the result of exposure of the bioplasm of the animal body to the chemical products of the growth of the specific microbes which constitute the virus of contagious fevers.

"2d, These particular chemical products are produced by

the growth of the microbes in suitable culture fluids in the laboratory as well as in the liquids and tissues of the body.

“3d, Immunity may be produced by introducing into the animal body such chemical products that have been produced in the laboratory.”

(To be continued.)

TRACHEOTOMY AND LARYNGEAL INJECTIONS IN AFFECTIONS OF THE THROAT.

By J. C. MEYER, Sr., V.S., Cincinnati, Ohio.

(A Paper read before the Ohio State Veterinary Medical Association).

Diseases of the throat described in every text-book, and their frequent appearance in veterinary medicine, must necessarily make the practitioner more or less familiar with their characteristics and gradations, therefore it would be not only superfluous, but also improper to consume the time by recapitulating the symptoms, causes, etc., particularly as in many of the ordinary cases, therapeutic interference is not wanted.

Last fall we had many opportunities to observe the last named form, as at one time the disease threatened to become enzootic. The milder sore throat cases, which were in the majority, suffered mostly from catarrhal pharyngitis, “Angina Pharyngitis.”

Among those affected with laryngo-pharyngitis were several which either took sick suddenly, or for which medical assistance was postponed, until suffocation threatened to cut short their existence, thus necessitating the operation of tracheotomy. For this purpose I prefer the trocer invented by Prof. Hayne, of Vienna, especially when the acuteness of the case indicates a probability that the tube will not be wanted any longer than a week or ten days, as in croup, purpura hemorrhagica, (Blutflecken krankheit), cramp of the larynx, etc. The technical procedure with this trocar requires the least time, there is no loss of substance, and the canulæ is not difficult to clean. The caliber, however, is too

small to allow such an animal to work. Prof. Vogel and Prof. Prosch are less favorably impressed by it; the former recommends Thompson's as the most suitable. Besides other objections, they claim there is danger in operating with the Hayne instrument, in that it is likely to pierce a jugular. I once thought to have met with such an accident, a short account of which may not be out of place.

One evening before sunset, summons reached me to come to see a dray horse, which just came in from work, whistling and roaring bad enough to suffocate, if not relieved soon. Provided with the instrument in question, I hurried to the place. Approaching the scene of trouble, I could distinctly hear the described noise, notwithstanding the crowd collected around the animal. Drawing nearer, I saw a well nourished black horse, very uneasy, with an anxious look, pumping flanks, and foaming from the mouth and nose. Under these circumstances I was obliged to operate without delay. I immediately grasped the trachea with the thumb, index and middle fingers of the left hand, about four inches below the larynx, pushing the sterno-maxillary muscles a trifle backwards from their lateral position, giving the tracheotome a passage free from all other tissues; the trachea was then pierced through, from left to right, in an exact transverse direction, with the instrument held in the right hand, so that the central opening in the tube remained in the middle of the windpipe. The stylet was then taken out, and the screws, (to make the canula stationary), adjusted, with allowance for some swelling. As the skin is the most sensitive tissue, it is advisable to first make an incision through the skin with a knife, before the trocar enters. Usually, upon withdrawing the stylet, air will follow, But alas! this time both openings discharged as much blood as their lumen would allow. The bystanders knew no better but than I was bleeding the horse, which they thought was well done; but my enthusiasm was easily controlled; the thought that the opposite jugular might have been struck appalled me; still I managed to keep calm, walked leisurely around to the other side of the horse, inspected the outlet of the tube, and

finding my supposition erroneous, I gained courage. At the same time the hemorrhage diminished and in one-half to three-quarters of a minute, ceased entirely, as did also the blowing and puffing. The canula was removed, the patient allowed to go to his stall, when he commenced eating hay.

During a fit of coughing he expelled some blood clots, mixed with slime ; perhaps a false membrane. The owner informed me that on the same afternoon the horse had performed hard work, to which exertion I attributed the formation of a hæmatoma saccatum, which the instrument must have penetrated, producing the critical symptom alluded to above. Four days after he was at work again.

Now, if the more popular operation, with excision of a suitable piece of the trachea, is resorted to, the convalescence requires more time, and, as we all know, will not admit of a complete restoration, though it is seldom harmful. Should the nature of the case require an artificial opening for several weeks or longer, particularly if the animal is obliged to work, a tracheotomy tube of a later pattern, consisting of two parts, arranged and attached in such a manner as to attract but little attention, is preferable.

Circumstances may compel us to deviate from the custom in the selection of a tube. Tumefaction of the neck at the outset, or the development of the same around the artificial opening, occasionally requires a change of the tube, in which case the operator must use his own judgment.

Recently I was called upon to treat another horse, with roaring and difficult respiration. The driver told me that about two months previous the horse had a similiar attack of about thirty minutes duration, since which time he evinced nothing wrong until now. As there was no swelling detectable around the neck or maxillary region, but repeated convulsive coughing, sweating, and a frothy discharge from the nostrils, I presumed it must be "Spasmus Glottidis," an ailment known to me only through literature. Whether my diagnosis was correct or not, the symptoms indicated the operation, which was performed, giving relief to the horse and all interested. The Hayne trocar was again chosen, ex-

pecting the horse would not need it any longer than a few days.

Despite the original symptoms, and an amnestic report, indicating a spasmodic affection of the larynx, I was obliged on the following day to change my diagnosis to "Glottis œdema," owing to the phenomena which developed through the night. All went well until the eleventh day, when I plugged the openings of the tube, as I thought sufficiently long to produce wheezing if the air passages were not clear; removed the canula, cleaned it, etc., but in eight to ten minutes after he commenced roaring again. My expectations not being realized, I felt obliged to insert another tube, of a larger caliber, which served two weeks longer, when the horse seemed to be all right, with the exception of the healing of the wound; whilst this was going on the horse received daily exercise, without showing any deficiency. But we were destined to be disappointed, for in the first day's hard work, it was found that his respiration was not yet normal. The proposition to send him to pasture for a few months met with approval, from whence we receive most satisfactory reports.

The active participation taken by some of our most progressive surgeons, in the laryngeal operation, "laryngotomy," recorded in the AMERICAN VETERINARY REVIEW, leads us to believe that diseases of the throat are attracting more attention than heretofore.

Considering these facts, a translation of an article on "Spasmus Glottidis," by Prof. Ancker, in Koch's *Encyclopedia der Thierheilkunde*, will undoubtedly be appreciated. It reads as follows:

Spasm of the glottis, spasmus glottidis, consists in tonic contractions of the lateral crico-arytenoid, the inferior and superior thyro-arytenoid, and the transverse arytenoid muscles; secondly, also the muscles of the neck. As in asthma, the cause has been sought for in the reflex irritation of the nerves of the larynx, consequently the spasmodic attacks recur at uncertain intervals. As the glottis becomes contracted during glottis spasms, it produces a dyspnœ, attended

with loud sounds during inspiration, therefore it was enumerated as one of the causes of roaring, but Gunther, Senior, doubts this, as he did not see it set in upon intentionally irritating the upper laryngeal nerve. That such a spasm can be brought about is not to be questioned, at least sporadic cases in horses have been observed. The spasmodic attacks recur sometimes daily, even while the horse is at work. Connected with them are cough and suffocating spells, sometimes restlessness, anxiety, shivering, distended nostrils, rattling in the throat, stretching of the head, staring look, staggering movements and collapse. Characteristic is the sudden abatement of the attacks.

In the autopsy of a horse, Degive found a cyst as large as a hen's egg, filled with colloid matter, at the base of the epiglottis, which, on account of its position, could not close the glottis, but may have called forth reflex spasmodic contraction.

To obviate threatened asphyxia, tracheotomy must be performed. Repeated attacks of spasms must be alleviated by hot water inhalations, or by a solution of kali. bromide, as prescribed for asthma, and by tracheal injections of the same, or a solution of cocaine or morphia. Toxic symptoms which may take place will disappear at once upon inhaling several drops of nitrate of amyl.—(Anacker).

As to therapeutic treatment, I am not in possession of any specific remedy, with which this manifold complicated ailment can be checked or influenced much. In benign cases, the owner, with the aid of his infallible neighbor, will with few exceptions, help himself. The malignant or complicated cases must be treated according to circumstances. It would be difficult to give a formula which would hold good for even a few days. There is, however, a discovery made known, which is worth communicating to those who believe that nature tolerates support, when rendered in a judicious manner and at the proper time.

At a recent meeting of the German Naturalists and Physicians at Heidelberg, colleague Dr. Jelkmann, of the Section for Veterinary Medicine, reported on "Laryngo-

Pharyngitis of the Horse, and its Cure by Laryngeal Injections of Prussic Acid," wherein he says:

"Although the results in the treatment of inflammatory affection of the respiratory mucous membrane in coryza, adenitis equorum, scalma, etc., were very unsatisfactory, with the remedies employed so far, namely: to cut short the morbid process, fault must not be found with the physiological action only, but also in the mode of application. As these agents are introduced mainly through the mouth, it is impossible for them to come in direct contact with the affected mucosa, and thus a local influence is almost excluded."

Local methods of treatment promised much better results, as through the examinations of Prof. Dr. Schuetz it was proven that the diseases in question nearly always, in their primary stage, present a limited infectious inflammation of the surface of the mucous membrane. Again, the experiments of Prof. Dr. Dickerhoff have also shown that the local treatment of the respiratory mucosa is easily accomplished. Therefore, if the proper remedy be found, the result will be satisfactory if the local treatment be adopted in time.

Dr. Jelkmann being guided by the above views, made numerous experiments, and applied many expedients which were recommended, and others which had not yet been put to test.

The first opportunity presented itself in a large transfer stable at Frankfurt, M., among horses affected with infectious laryngo-pharyngitis, a scalma enzootic.

Among one hundred horses in an enclosure, some sixty took sick within six weeks, at intervals of one, two and four days. It being midsummer, those patients, six in number, which took sick in the first three days were isolated and placed in a large, roomy, well-ventilated hall.

The internal treatment with the remedies known as promoters and regulators of morbid slime secretion, etc., was carried out from the first to the seventh day, but seemed to have no visible effect, nor did the externally applied derivans.

In consequence, laryngeal injections were made as an ex-

periment. By this time the number of patients increased to twelve.

Laryngeal injections were administered to ten of these patients, each two receiving a different compound, for example: one consisted of solution of alum acetum, another of Lugol's solution, another contained cocaine hydrochloric, and so on. The remaining two of the twelve were entrusted to physiatrice.

This treatment was continued for four days without any apparent improvement, only in those having received the cocaine, it was noticeable that the coughing irritation grew less, soon after the injection, which, however, in a few hours recurred with the same violence. In those left without treatment the disease remained stationary.

Taking in consideration the satisfactory results attained in human medicine by applying anodynes to the suffering tissues, in inflammatory affection of the larynx and bronchial mucous membrane, an experiment was made with the following solution: consisting of morphia hydrochloric, 2.0; aq. amygdalar. amar., 200.0; ten grains of this solution was injected every morning and evening into the larynx of each of five other patients. The result was astonishing. The temperature, which was 39-8 to 40-7° Celseus, fell from the day of the first injection until the fifth, by which time the normal state was reached. The local appearances in the region of the œsophagus and mucous membrane of the larynx diminished in the same degree, the cough became loosened, less painful, the dysphagia disappeared and the appetite improved. The hyperplastic swellings of the maxillary glands also dissolved.

Of the twelve horses which took sick first and not treated after this manner, not one had recovered sufficiently to be able to perform the lightest work. While those which took sick eight to ten days later, and treated with aq. amygdalar. amar. and morphia, were already at their usual work.

In the last two years Dr. Jelkmann treated all laryngeal affections in horses with positive and speedy success, as long as metastasis of the other organs did not set in.

If the local inflammatory process of the mucous membrane was in the early stage of development, the disease could be cut short within two to three days, indeed be entirely cured. If the disease had advanced further, a four to eight days' treatment with injections was necessary. It is remarkable that in two hundred patients the hyperplastic swellings of the sub-maxillary glands diminished after the first injections, and in but three cases, a slight imperfect abscess formed.

After these results there is no doubt that the prussic acid contained in bitter almond water with morphia, exercises a specific healing effect on the respiratory mucous membrane.

Prof. Binz's established non-fermentative and anti-putrefactive qualities of prussic acid supports such an opinion.

In the diseases in question, laryngeal injections are most effective. The head is lifted and stretched forward and the needle inserted in the so-called thyroid cartilage space, the contents of the syringe then being emptied under strong pressure. This pressure is absolutely necessary to the favorable result of the injection, for the diseased surface of the mucous membrane should not only be wet, but at the same time washed off; this washing off cannot be accomplished by the gentle inpouring of the fluid into the larynx.

Unfavorable manifestations have never been noticed to follow upon injections being thus carried out. If it is inconvenient to inject twice per day, one injection of twenty grains will suffice. When the weather is cold, it is advisable to warm the fluid before injecting.

"Abscesses, that may form after the injection, will heal readily, when lanced in time, and cautious antiseptic treatment is pursued."*—(Koenig).

HYPOSULPHITE OF SODA.

By E. H. SHEPHARD, V.S.

(A Paper read before the Ohio State Veterinary Medical Association, Cleveland)

For some time I have been impressed by the fact that we have an agent classed among our veterinary remedies whose

*Vol. 16, p. 375, Archiv der Wissenschaftliche und Praktische Thierheilkunde.

virtues are not appreciated as perhaps they should be. And also that some simple remedies prove to be a power in the hands of some, while with others they seem to possess no curative virtues at all. It is undoubtedly a fact that the actions of many drugs are modified, not only by different organism, but by different climates and different surroundings, and especially when combined with other agents.

It is my endeavor to-day to bring before you, and, if possible, impress upon your minds some, at least, of the virtues I have found to be possessed by this cheap and efficient remedy, namely, the hyposulphite of soda.

This preparation is formed by boiling the filtered solution of sulphite of soda with sulphur, and after filtration and concentration the crystals are deposited in colorless transparent prisms or plates. It is odorless, and has a cooling and somewhat bitter taste, is neutral or faintly alkaline in reaction, and is soluble in 1.5 parts of water. Its main action is as an antiseptic, but it is also a strong deodorizer, alterative and insecticide. In the stomach it gives off sulphurous acid, which preparation it closely resembles. It destroys bacteria septic-germs, arrests fermentations and removes offensive smells. It is much used in photography, and forms an important part in some officinal tests.

Among the first cases in which I used this salt with marked success was in the treatment of a valuable stallion but recently brought from California, and not yet acclimated. Soon after arriving, many parts of the body, especially those covered by the harness, became covered by eruptions, and by their intense itching caused the animal to rub and produce a raw surface, and he could with difficulty be prevented from irritating it still more. A peculiar black discharge issued from the anus continually and trickled down the thighs and so on to the ground; his tail had become full of it and seemed from its tarry consistency to defy thorough cleansing. A peculiarly bad odor accompanied the discharges, and his appetite was capricious. His food and surroundings were of the cleanest and best, and the general attention bestowed upon him was befitting a \$10,000 stallion.

After thorough examination I put him on hyposulphite of soda, \mathfrak{Z} ss doses, three times a day, with a very small quantity of gentian, eighteen powders, six days' treatment, sufficient to cleanse and cool his blood, entirely allaying the skin irritation and regulate the bowel secretions to almost perfection. In one year from that time he had a slight similar discharge from the bowels, which was entirely overcome by one-half dozen powders of the same preparation.

During the past summer I have treated skin trouble, whether dependent upon constitutional or local causes, almost entirely with this preparation of soda and with universal good success. One case deserves mention especially. A young pacing horse with considerable speed had been fed pretty high to fit him for a good showing at the fall sales at which he was entered. Unfortunately, without much regular exercise he was given a long drive on a hot day, and the next morning I was called and found him one mass of pimples from the tips of his ears to his hoofs. In a few days he was as hairless as a Mexican dog, the skin scaling off and leaving an irritable itchy surface which he rubbed and bit, and actually tore with his teeth at every opportunity. Solutions of hyposulphite were applied externally, and following a physic \mathfrak{Z} i doses four times a day given internally. Other preparations were used for a day at a time externally, but none seemed to allay the irritation as well as the soda. With a cooling diet and an occasional stimulant for the kidneys, thirty days found him again on the road in fair flesh, good spirits and covered with a thick, glossy coat. Other cases of eruptions of less consequence, some affecting the larger part of the body, others only local, have been successfully combatted, and the animal kept at his work.

In speaking of this medicine, Finlay Dun in his excellent work gives several interesting experiments, showing its power as a poison to fungi and other low organic forms, and many have been made, mostly as recorded with the sulphite, showing its power to control septic conditions.

Dogs previously prepared for several days with small doses of hyposulphite have withstood injections of fetid pus,

and even survived the injection of the purulent discharge from a glandered horse. It is in the treatment of septicæmia and all putrid condition of the system that I think this agent deserves a thorough trial.

About one year ago I was called to see a promising colt, the right side of whose face was terribly swollen, and from eight or ten openings issued a fetid, putrid discharge somewhat dark in color and mixed with streaks of blood. The skin seemed to a large extent to be under run, and I had to open several pockets to get a drainage. There were several openings into the mouth, and the animal could scarcely eat soft food, while on his back, just forward of the hip on the right side, was a large swelling discharging from its one opening a fluid identical to all appearance with the other.

The pulse was 82 and wiry temperature $104\frac{1}{2}^{\circ}$ F. Y. I concluded that here we had a serious case but could not give the direct cause unless it originated with the teeth, which were quite sharp opposite the internal openings, I dressed the teeth and thoroughly cleansed the abscess, using a bichloride solution 1-5,000, and left a solution for future injection of 1-5,000. I administered \mathfrak{z} i of hyposulphite of soda and left instructions that he should get \mathfrak{z} ss every four hours in solution. I saw my patient again in two days: pulse 60 temperature 103° , eating more and feeling apparently better. The abscesses showed a more healthy discharge and not inclined to spread, I continued the medicine for some days, reducing it in quantity, and my patient made a rapid recovery. I want to here state that the owner of the colt is one of the leading physicians of Cleveland, and he took occasion soon after to call my attention more particularly to this remedy, which was entirely new to him.

Two weeks ago I had a long talk with him again and he was very enthusiastic over his success with it, saying, "It has worked like a charm in every case." And he proceeded to call my attention to numerous cures he had effected with it, one or two of which are particularly worthy of mention.

From a scratch or small injury a young man's hand and arm had become swollen almost out of resemblance to its

original shape, the line of lymphatics to the shoulder were terribly enlarged, and the hand and lower arm had assumed a leaden hue which, with the constitutional symptoms, indicated the probability that amputation might soon be necessary to save his life. However, it was resolved to use the hyposulphite, and note its effect if any. Gr. xv were administered every four hours and by the following day a preceptible change for the better could be seen, and on the second day considerable hope was given that the arm could be saved. The fourth found him to all appearances out of danger and he rapidly made a complete recovery.

Another, still more serious, was the case of a man whose foot had been crushed down at the instep by the wheel of a heavy wagon and in hopes of saving it amputation had been delayed until almost before they realized the fact, it had become putrid. The limb was terribly swollen and pressure upon it, even as high as the thigh, would cause a fetid discharge to issue from the opening below. And after amputating just above the ankle, two large pus cavities were tapped above the knee and three below, to get sufficient drainage for the purulent matter that was fast accumulating. Every one who saw it thought there was little chance for the remainder of the leg or the patient's life, as he was much wasted and very weak. However, my friend, who was called in consultation, persuaded them to rely on the soda, which they did with very gratifying results, saving the patient's life and the remainder of the leg.

In numerous cases of wounds large and small where there was much discharge I have used this agent, and cannot compute the good it has done me. In the results of a runaway accident one horse had a wagon-tongue thrust into his neck just beneath the third cervical, passing through to the skin of the opposite side and in his efforts to escape, muscles, trachea, œsophagus, arteries and veins were stripped of their attachments and hung dangling like so many sections of slack rope; one wing of the atlas was fractured and a large pocket opened below along the lower surface of the vertebræ and behind the inferior cervical muscles. The depression of the head parti-

ally drained the several large pockets, and this case was treated successfully in a short time by local applications of bichloride and white solution, and the hyposulphite internally, there being scarcely any fetor at any time. I could call your attention to other cases just as gratifying to me, but I wish to name another condition for which I have found my subject beneficial.

In the treatment of gastric and bowel troubles associated with fermentations, we find different gases generated in various proportions, according to the cause, time elapsed, and surrounding conditions. In cases apparently similiar I have found it necessary to use entirely different agents to gain my desired result. In the use of the hyposulphite for these conditions, I believe it to be an essential adjunct in every case. Associated with the process of fermentation and the formation of gases, there is always absorption to a greater or less extent of these poisonous products into the blood, and in many cases this is the sole cause of death. In the hyposulphite we have one of the greatest antiseptics and blood purifiers, thus acting at the same time to prevent absorption, to destroy the already absorbed, while striking directly at the cause, it is very effective in arresting the fermentation. And again, in azoturia, although my experience is here limited, I am becoming more and more convinced that it is most worthy of a thorough trial. Undoubtedly, the whold line of symptoms in this disease is caused by the action of poisonous products upon the nerves and their centers; thus, directly through the condition of the blood, we are sure to get our several results.

Urea is one of the natural constituents of urine, excreted from the blood by the kidney. In this disease, immense quantities of it are excreted, showing an unnatural action of the blood, which from its nitrogenous character, is without doubt. The hyposulphite of soda acts directly to diminish urea, and increase uric acid, the sulphates, sugar, and other non-nitrogenous constituents, a condition certainly necessary to the recovery of the patient. I have used it in several cases, all of which have recovered. Two of the number were pros-

trated and could not rise, and one that was placed in slings could not bear any weight on one hind leg for five days, and although standing, his urine had to be drawn during the first three days.

Considering the scarcity of my patients that have lived after being prostrated with azoturia, and subject to my previous treatment, I feel that my new departure deserves further trial, which I shall certainly give it at my first opportunity.

I wish once more to trespass upon your patience by drawing again from my memorandum of experience. Two cases of abortion, the first occurring about one week ago before I was called. Was informed the animal appeared well for two or three days, then began to be uneasy, ate little, and gradually grew worse until at the present she ate nothing, and was continually uneasy. Respiration 36; pulse 80; temperature 105° . A fetid discharge issued from the vulva, and the abdomen had a tucked-up appearance, while she strained at short intervals, passing a colored discharge. I found the vagina and uterus much swollen, the latter containing a small quantity of putrid matter. I cleansed the parts as thoroughly as I could, although the effort caused much irritation, and being a little afraid to risk the hyposulphite alone I combined with it fair sized doses of aconite; and, after two or three days of uncertainty she began to make a slow recovery, which proved permanent. The other, not as serious as I would have liked, I was called to attend within an hour after the untimely delivery. Found her not much changed from the normal in pulse, and temperature, inclined to eat, yet a little uneasy; and to all appearance the abortion was a complete one. Gave her a light opiate, and waited developments. The next day she was more uneasy, lying down considerably, eating little; respiration 24; pulse 72; temperature $104\frac{1}{2}^{\circ}$; and quite a profuse discharge from the vulvas. I attended to her general comfort, more especially left instructions in regard to diet; administered $\frac{3}{4}$ of hyposulphite in solution, and left similar doses to be given every four hours. The next day respiration 16; pulse 36; temperature 100° . Complete recovery followed.

In conclusion, my experience with this agent has been highly satisfactory to me, and I could name many more cases where I attribute the sole cause of recovery to it. Let me urge all who have not given it a thorough trial to do so, and from those to whom it is familiar I should be pleased to hear the results of their experience.

EXTRACTS FROM FOREIGN JOURNALS.

PELVIC HERNIA—CONSTIPATION—ABNORMAL POSITION ASSUMED BY THE PATIENT—DIAGNOSTIC VALUE OF THIS SYMPTOM.

BY MR. T. BRISSOT.

Referring to the fact that it is not uncommon to see horses suffering with colics assume the dog-sitting position, the author describes the case of a mare which he was called upon to treat. When first seen, she was resting on her knees, with her head extended and resting on the ground, and her hind quarters elevated; in fact, in the position of a cow in the first part of the movement of rising. When made to rise to her feet she showed a strong desire to resume the former position, and did so, in fact, twice in less than ten minutes. There was an evident indication of pelvic pain. Upon rectal examination it was found that the pelvic curvature of the colon was hard and distended, and was engaged in the pelvis, occupying the place of the bladder, to such an extent that at first neoplasm of the vesical organ, or of the floor of the pelvis was suspected. But this supposition was corrected by an exploration of the vagina, and catheterism of the bladder. The intestines were filled with a hard mass and could not be pushed back to their position. It was a true pelvic hernia. The rectum was full of hard, dry balls of manure. The case proved to be one of constipation, and was relieved by rectal injections of sulphate of soda and a purgative.—*Rec. de Med. Vet.*

PERFORATION OF THE VAGINA IN A COW DURING COPULATION.

BY N. BEISSWAENGER.

This accident, which is usually a rare one in this species of animal, is recorded on account of the comparatively slight relative lesion by which it was accompanied. A young cow, in good condition, was covered by a strong and vigorous bull, which performed the act with excessive impetuosity. Immediately after copulation a copious stream of blood escaped through the vulva, and the cow died before the arrival of the author. At the post mortem a laceration was found, on the right wall of the vagina, about two inches in length, and situated within a short distance of the opening of the vulva.—*Repert der Thierh.*

PERITONEAL TUMOR IN A HORSE.

BY MR. AULAGE.

In this case the patient, an old horse, twenty-seven years of age, had within the past six months suffered on several occasions with attacks of colic, which were, however, generally relieved by cathartics. On this occasion the symptoms were not, at first, alarming. When first seen, the pulse was found normal, the artery somewhat full, the mucous membranes were not ingested, the ears were warm, the loins flexible, there was some borborygmus in the large colon, the abdominal pain was not violent. The symptoms were relieved by a resort to simple treatment, but reappeared in a much aggravated form on the day following. The animal was then constantly lying down and rising up, the abdomen was retracted, the head was frequently turned backwards, on the right and left sides alternately, with the gaze directed to the flanks; the borborygmus had subsided, the loins were stiff, and the pulse was small and accelerated. Rectal exploration seemed very painful, though the organ was empty. Notwithstanding an active treatment, the case ended fatally after thirty-three hours duration. The post-mortem revealed the existence of a volvulus of the posterior part of the small intestine, which on closer examination proved to be a complete strangulation,

produced by a tumor in the lumbar region, of the size of a hen's egg, suspended by a thin peduncle, about eight inches in length.—*Rec. de Med. Vet.*

FRACTURES OF THE OS CALCIS; RESULT OF MUSCULAR EFFORTS.

BY MR. DETROYE.

The following observations derive their principal interest from the manner in which the lesions to which they refer occurred. A bull fifteen months old in attempting to cover a cow had raised himself about on a level with her croup, when a sudden noise like that of the breaking of a dry piece of wood was heard, and the animal fell down on his hind quarters. When he got upon his feet he walked on three legs, dragging the right leg, the anterior face of the foot resting on the ground. The next day the hock was slightly swollen, and the point of it less prominent. The tibio-calcanean triangular space had disappeared, the crepitation was well marked, and there was an oblique fracture of the os calcis, in the middle of the bone. A splint was made with a piece of sheet iron, made in the form of a trough or gutter, in order to adapt itself to the anterior face of the leg and of the hock, and secured by four leather straps, two above and two below the hock, and extending, therefore, from the middle of the tibia to the middle of the cannon bone. This was well padded, and so adjusted to the leg as to keep it in perfect extension. After three weeks the animal became restless, and displaced the splint, and when it was removed the foot rested flat on the ground, the hock had resumed its normal shape, with scarcely any malformation, and the patient stood upon his leg. In a few weeks the recovery was complete, and the lameness had subsided, notwithstanding the presence of the callus that remained.

2d. An old horse while lying down made a sudden effort to rise. At that moment his right hind leg slipped backwards, and to avoid a fall, another effort was made, which failed, and the animal fell, unable to rise. A fracture of the os calcis near its articulation with the astragalus was readily recognized; and the animal was destroyed.

3d. A young calf was found to be very lame, in consequence of falling into a large excavation, the hock being painful and much enlarged. Upon being slaughtered, the os calcis was found to be fractured, obliquely, about an inch below its summit, with a laceration at that point, of the tendon of the perforatus muscle. The fracture took place at about the union of the two nuclei of ossification of the bone.—*Ibid.*

SPRINGHALT AND METATARSAL TENOTOMY.

By M. L. SERGENT.

As a point in the statistical argument in favor of this mode of treatment of the disease in question, the author, following the directions recommended by Bocca, Brogniez, Delwart, Palat and Degive, reports that he has performed the division of the tendon of the lateral extensors of phalanges upon fourteen horses suffering with springhalt in various degrees, and has obtained the following results: Nine recovered completely; four showed a very satisfactory improvement, almost a recovery; and one was slightly improved. Metatarsal tenotomy is a perfectly simple and harmless operation, and offers sufficient chances of success to encourage its performance, and justify its adoption into the domain of common practice by the guild of qualified veterinarians.—*Ibid.*

COLLEGE COMMENCEMENTS.

CHICAGO VETERINARY COLLEGE.

The close of the eighth session of this institution took place on the 24th of March at Hooley's Theatre before a large audience of the friends of the College and of its Alumni Association. The degree of D.V.S. was conferred by Prof. R. J. Withers upon the following gentlemen:

Allen, J. M.....	New Richmond, Wis.
Archibald, R. A.....	Morrison, Ill.
Annand James G.....	Lake City, Minn.
Arpke, A. H.....	Franklin, Wis.
Bagnall, Wm. P.....	Millbrook, Pa.
Barnett, J. A.....	Edwardsville, Ill.
Barnett, Otis.....	Edwardsville, Ill.
Berner, J. S.....	Minneapolis, Minn.
Bone, J. L.....	Bethany, Ill.

Borum, S. D.....	Winchester, Ill.
Bristow, Geo. E.....	DeKalb, Ill.
Cain, Geo. E.....	Lynn, Mass.
Cann, C.....	Elizabethtown, Ky.
Chaffee, F. K.....	Lee, Mass.
Chandler, T. W.....	Chicago, Ill.
Ditewig, Geo.....	Camp Grove, Ill.
Donaldson, R. H.....	Fairmount, Minn.
Drummond, R. H.....	Elmdale, Kas.
Dyson, O. E.....	Rushville, Ill.
Eells, F. C.....	Ottawa, Ill.
Eisenhoefer, A. L.....	Abilene, Ill.
Fickert, A., Jr.....	Theresa, Wis.
Finley, R. W.....	Manitowac, Wis.
Fisher, H. S.....	Chicago, Ill.
Fitch, D. N.....	La Porte, Ind.
Fitch, Schuyler.....	Huntertown, Ind.
Folts, D. A.....	Auburn, Wis.
Fox, D. F.....	Peru, Ind.
French, A. H.....	Aberdeen, Miss.
Gansel, B. E.....	Chicago, Ill.
Gwinn, E. E.....	Oakland, Ill.
Hanna, A. R.....	Peoria, Ill.
Harrington, Wm. B.....	Paw Paw, Ill.
Hawley, H. W.....	Beloit, Wis.
Heer, R. S.....	Galena, Ill.
Hinkley, E. R.....	Norwalk, Ohio.
Hoover, L.....	Richmond, Ind.
Johnson, H. J.....	Milwaukee, Wis.
Judson, F. E.....	Polo, Ill.
Kelso, J. R.....	Milwaukee, Wis.
Kerr, C. C.....	Chicago, Ill.
Kinsey, G. W.....	Lansing, Mich.
Kinyon, B. F.....	Sharon, Wis.
Knight, W. A.....	North Topeka, Kan.
James, Gus.....	LeClaire, Ia.
Laws, J. P.....	Westfield, Ill.
Leech, Geo. E.....	Delavan, Wis.
Lennon, F. J.....	Joliet, Ill.
Mabie, Wm. A.....	Warsaw, Ind.
Malone, Jas.....	Henry, Ill.
McNair.....	Kaneville, Ill.
Miller, Fred.....	Portland, Ind.
Molenhoff, R. H.....	Mattoon, Ill.
Mohney, C. E.....	Vicksburg, Mich.
Montgomery, C. C.....	Middletown, Ill.
Noble, Geo. E.....	Nashua, Ia.
Quitman, E. C.....	Chicago, Ill.
Richardson, W. J.....	Harvard, Ill.
Rishel, E. H.....	Vicksburg, Mich.
Robinson, W. F.....	Caldwell, Kan.
Rush, E. G.....	Girard, Ohio.
Ryan, J. H.....	Sycamore, Ill.
Salisbury, H. H.....	Summit, Miss.
Schaefer, V.....	Oakland, Neb.
Scott, C. E.....	Jacksonville, Ill.
Seago, O. A.....	Jerseyville, Ill.
Seaman, Wm. A.....	Marengo, Ill.
Sherwood, A. E.....	Sheldon, Ia.
Shipley, L. N.....	Sheldon, Ia.

Siegrosser, J. L.....	Chicago, Ill.
Smith, C. P.....	La Prairie, Ill.
Spencer, Hume F.....	San Jose, Cal.
Stull, C. M.....	South Bend, Ind.
Tyler, J. L.....	Onarga, Ill.
Watson, John G.....	Humbolt, Ill.
Williams, Charles.....	Northwood, Ia.
Wilmington, J. A.....	Lake Villa, Ill.
Yeager, F. D.....	Lena, Ill.

MONTREAL VETERINARY COLLEGE.

DEPARTMENT OF MCGILL UNIVERSITY.

The convocation of the Faculty of Comparative Medicine and Veterinary Science of McGill University was held in the William Molson Hall. There were quite a number in the hall, though not nearly so many as it will hold, at the big convocation to-day. In the centre of the hall were the students of the various years, and on either side a number of ladies and other friends who had assembled to see the graduation exercises.

Prompt at three o'clock Mr. J. W. Brakenridge, B.C.L., registrar of the university, entered at the head of a procession including the Chancellor, Sir Donald A. Smith; the Vice-Chancellor, Sir William Dawson; Dr. D. McEachran, Dean of the Faculty of Comparative Medicine and Veterinary Science; the professors of the Faculty and the members of the convocation and the graduating class.

The Chancellor having taken his seat, the proceedings were opened. Among those who occupied seats on the platform were Dr. Stewart, of the Medical Faculty; Mr. J. J. Curran, Q.C., M.P., and Mr. John W. Gadsden, M.R.C.V.S., of Philadelphia, whose valuable donation of a collection of books, pathological and anatomical specimens, has already been noticed.

The Chancellor called upon Professor McEachran, Dean of the Faculty, who delivered a very short but pithy address.

He then read the list of prize winners, who were then called up and presented with their prizes by Sir William Dawson, assisted by Professor Charles McEachran. The list is as follows;

Veterinary medicine and surgery, George E. Macaulay;

anatomy, Thomas E. Simpson; diseases of cattle, D. B. Comstock; chemistry, J. D. MacIntyre; physiology, J. D. MacIntyre; histology, Wilfred Plaskett; materia medica, J. D. MacIntyre; botany, W. Plaskett; zoology, M. C. Wylie; the best examination in all subjects (silver medal), Sidney S. Twombly; second prize for the same, John A. McCrank.

Extra prizes—For the best essay read before the Veterinary Medical Association:—1, Sidney S. Twombly, \$10; 2, David St. Louis, \$8; 3, J. A. McCrank, \$7.

For the best essay read before the Society for the Study of Comparative Psychology (book)—J. A. McCrank.

The following gentlemen were then called up, and, having taken the customary oath, the degree of D.V.S. was conferred upon them by Sir William Dawson, Mr. Brakenridge presenting the diplomas:

Sidney S. Twombly, John A. McCrank, David St. Louis, Thomas B. McDonald, Thomas C. Simpson, John Watson, George E. Macaulay, A. W. Gorham, Donald B. McDonald, Charles M. Higginson, David B. Comstock, George Townsend and George A. Miller.

The following gentlemen were awarded the degree as graduates of the late Montreal Veterinary College, who have been found to have complied with the regulations governing the granting of the degree to such:—

Paul Paquin, bacteriologist and professor of veterinary science, Agricultural College, Columbia, Mo.; A. R. Rowat, chief veterinarian to the government of Honolulu, S. I.; Peter Cummings, lecturer of anatomy, Quebec Veterinary College; John Robertson, veterinary surgeon, Second United States Cavalry; John Ryan, lecturer Chicago Veterinary College, Chicago, Ill.; Charles R. Simpson, Charlestown, Mass.; James B. Paige, lecturer on veterinary medicine, Amherst Agricultural College, Amherst, Mass.; Archibald A. Keys, Minneapolis, Minn.; and Edward C. Crevier, Peterborough, Ontario.

Dr. McCrank was then called upon and delivered the valedictory address. Sir Donald Smith then referred in terms of high praise to Dr. Gadsden, for his munificent present to the Faculty, and called on that gentleman to speak.

Dr. J. W. Gadsden, M.R.C.V.S., said: I have had excel-

lent opportunities for six years past of knowing the nature of the work being done by the Montreal Veterinary College, having for that time occupied the position of one of the examiners in the practice of medicine and surgery. I may say that I have watched its progress with interest, and year by year noted the improvement in the proficiency of the young men coming before us. Besides, I am thoroughly aware of the high reputation of the school, and the gentlemen who form its staff of professors and associate professors. And I know how much the Dean of the Faculty has had to do in preventing contagious diseases in your live stock, in the advantage of Canada over the United States of from \$10 to \$15 a head for every animal exported to Great Britain.

I wish here to say, that I have noticed with considerable surprise, the fact stated by the Dean, that this Faculty, second in importance, both commercially and scientifically, to no other Faculty in the university, should receive no aid to enable it to carry on its good work. Surely in this great commercial metropolis, there are gentlemen who can appreciate the great work this Faculty is engaged in, sufficiently to induce them to contribute to its endowment. As an inducement for others to do something towards helping on the progress of comparative medicine, I beg to say that I have spent thirty-three years of my life in the active practice of the profession, during which time I have accumulated a library and private museum of considerable value. The library contains among other works, "The Veterinarian" for fifty years, a most important period in the history of our profession, and especially on the subject of contagious diseases of domesticated animals in Great Britain, and the legislation bearing on this important subject. As I am now about retiring from practice, I have much pleasure in presenting both to this Faculty, the only condition I ask being that they be kept intact, and form a part of the library and museum of this Faculty. In conclusion, I beg to express a hope that before long this Faculty will have among the benefactors of the university, friends enough to put it on a footing, if not equal to the older Faculties, at least such as will enable it to keep pace with them on the onward march of improvement. I may say that the class who have gradu-

ated this season, are equal, if not superior, to any class I have previously examined, and I have no hesitation in saying that they will uphold in every way the reputation of Canada's great seat of learning.

Dr. M. C. Baker delivered a valuable farewell address to the students, giving a retrospect of their past studies, and a very appreciative account of the work before them. His address contained some excellent advice. Among other things he counselled them to remember that they could not live for themselves alone, and to make total abstinence their motto.

The Chancellor, Dr. Curran, delivered a long and interesting address to the class, and the exercises were brought to a close in the usual manner.

NEW YORK COLLEGE OF VETERINARY SURGEONS.

At the last commencement exercises of this institution, the following gentlemen received their diplomas of veterinary surgeons:

Tritton, R. Lindsay.....	Boonton, N. J.
Deal, John D.....	Charleston, Mo.
Haley, James, Jr.....	Hamilton, Scotland.
Browning, Pleasant H.....	Virden, Ill.
McDougall, Robert P.....	Wilmington, N. C.
Plummer, Edward, Jr., M.D.....	Baltimore, Md.
Strong, Wesley F.....	Washington, D. C.
Chambers, Edgar.....	New York City.
Ferster, James H.....	" "
Hassloch, August C.....	" "
Manney, Robert N.....	" "
McNair, Robert J.....	" "
Caulfield, Charles E.....	" "
Mullen, James H.....	" "
Lawler, James H.....	" "
Brooks, William H.....	Brooklyn, N. Y.
Curran, John J.....	" "
Meinck, Louis J.....	" "
Moadinger, Charles F., Jr.....	" "
Anderson, Charles E.....	City Island, N. Y.
Smith, D. Edgar.....	Manhasset, N. Y.
Shearer, James B.....	Pittsford, N. Y.
Doyle, William J.....	Auburn, N. Y.
Childs, Thomas S.....	Troy, N. Y.
Stinson, William.....	Chelsea, Mass.
Henderson, Edwin P.....	" "
Moore, Charles S.....	Plainville, Mass.
Miller, Monroe B.....	Old Line, Pa.
Miller, Harry K.....	Mannheim, Pa.
Collom, William B.....	Doylestown, Pa.
Massinger, E. Michener.....	Chalfont, Pa.

Downs, Morris M.....	West Chester, Pa.
Fox, Robert J.....	Bryn Mawr, Pa.
Christy, Henry S.....	Philadelphia, Pa.
Albright, Harry F.....	Allentown, Pa.
Young, Edward J.....	Media, Pa.

SOCIETY MEETINGS.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The Illinois State Veterinary Medical Association held its regular semi-annual meeting February 25th at the Windsor Hotel, Bloomington. The meeting was called at 10 A.M. by President Baker, of Chicago, and ten members responded to roll call.

The following members were present during the session : Drs. Jas. Addison, S. S. Baker, J. W. Harwood, C. E. Hollingsworth, J. F. Ryan, C. E. Sayre, Jno. Scott, R. J. Withers, W. L. Williams, Jno. McClintock, Jos. T. Nattress, J. F. Pease, H. Thomson, A. G. Alverson, N. I. Stringer, M. Wilson and G. L. Crocker (new member).

Several members-elect were present, but did not qualify.

The minutes of the previous meeting being read and approved, correspondence was read from Prof. McIntosh, regretting absence, and from Drs. Walker and Schoenleber, regretting absence and sending essays.

The Corresponding Secretary also reported correspondence with the Secretary of the National Association in regard to its next annual meeting.

The Treasurer's report was then read, showing a balance of \$31.95 in the treasury.

The committee on reprinting the constitution and by-laws was called on to report. The chairman being absent, Dr. Pease reported that the reprints could be obtained for \$15.00 per hundred.

Dr. Baker and others reported better figures. On motion by Williams seconded by Hollingsworth, the subject was deferred until later.

The following gentleman's names were then proposed for membership : Drs. T. J. Gunning (Chic. '90), Neponset ; Jno. Miller (Montreal '88), DeKalb ; J. W. Parkinson (Chicago '90), El Paso, and N. P. Whitmore (Chicago '90), Gardner.

On motion by Dr. Williams, seconded by Dr. Withers, they were unanimously elected by acclamation.

On motion by Dr. Williams, seconded by Dr. Hollingsworth, the order of business was suspended and a committee appointed to revise the constitution and by-laws, and report at this meeting. The Chair appointed Drs. Williams, Withers and Hollingsworth.

The following bills were then read : For stationary, Recording Secretary, \$1.00 ; express on reprints, \$1.35 ; programmes, envelopes and postage, \$7.00. On motion by Dr. Hollingsworth, seconded by Dr. Withers, they were ordered paid.

Dr. Hollingsworth presented a bill of \$10.00 for stationery and postage during his term of office as Corresponding Secretary. On motion by Dr. Ryan, seconded by Dr. Withers, it was ordered paid.

Dr. Wilson, of Mendota, presented a paper on "Diseased Meats." *

DISCUSSION.

Dr. Withers favored the thorough inspection of all meat animals before and after slaughter. Also the thorough inspection of milk and milk dairies. He favors the spaying of cows used for dairy purposes, as thereby the influence that æstrum has upon the quality of the milk is avoided.

Dr. Williams favors strict inspection in the interests of the consumer and not of the producer. Cooking meats and boiling milk will destroy most micro-organisms, but where the chief damage is done by ptomaines or poisons secreted by the microbes, this is not destroyed by cooking. Where these exist, the meat or milk should be condemned.

Dr. Ryan described the method of inspection used by the Jewish officials, and commended it as very thorough and highly satisfactory.

In answer to a question, Dr. Scott reported that no work was being done at Peoria to check the spread, etc., of actinomycosis.

The essayist spoke of a recent decision in Scotland regarding bovine tuberculosis. All of the carcass of an animal so diseased is condemned for use.

Dr. Thomson, of Paxton, then read a paper on "Fractures." *

DISCUSSION.

Ques.—"Do you always put such cases in slings?"

Ans.—"Yes."

Dr. Williams: I sling some and some I do not. With colts, I prefer to bandage in plaster and turn them out.

Dr. Scott: "How do they get up and down?"

Dr. Williams: "They soon learn to manage the stiffened limb."

Dr. Nattress: "How do you put bandages on to stay above the hock?"

Dr. Williams: "Wrap with batting, then with dry muslin bandages; then stiffen the broken parts with sole leather splints well soaked in hot water, and cover with freshly wetted plaster bandages."

Adjourned for dinner.

The society re-convened at 2 P.M. and renewed the discussion.

Dr. Withers uses slings as seldom as possible.

Dr. McClintock mentioned a case of fractured humerus that was put in slings, and made a good recovery.

Dr. Scott has had several cases of fracture of the *os conoræ*, and has used plaster casts, and put in the slings, and had good results.

Dr. Withers has used the plaster casts alone in these cases, and had good recovery.

On motion the discussion was closed.

On motion by Dr. Pease, seconded by Dr. Ryan, the order of business was suspended, to receive the names of applicants for membership.

Dr. G. Z. Barnes, (Ames, '87), of Pekin, and Dr. G. L. Croker, (Chicago '90) of Springfield, were then proposed.

On motion by Dr. Ryan, seconded by Dr. Sayre, they were elected by acclamation.

Dr. Pease then read a paper on "Malaria in Horses."*

*To be printed in June issue.

DISCUSSION.

Drs. Williams and Withers being absent on committee work, this paper was spared mutilation. Dr. Sayre mentioned a case which he could attribute to no other cause but malaria.

Dr. S. S. Baker inquired if the essayist considered two drachms of quinine a "large" dose.

ANSWER.—"It proved large enough in these cases, which were all quite small or young animals. To a large horse I would give half an ounce, and if this, repeated, did not produce the desired effect, would increase,—if necessary, to an ounce."

The Secretary then read the paper of Dr. Walker, as the author was not present.

Dr. Baker invited discussion, as he had seen the case. The general concession was that it was a pelvic abscess. The question arose as to the possibility of an abscess being formed from a previous trocar puncture in the flank, and the pus gravitating downwards and backwards into the pelvic connective tissue. The opinion was general that it could not have been so formed.

Dr. Schoenleber sent in his paper on the subject of "Our College Work too limited." It was not discussed.

Dr. Sayre then read his essay on the subject of "Veterinary Dentistry."*

DISCUSSION.

Dr. Williams drew attention to the fact that caries does not start on the table surface as a rule. The hollow spaces in the ends of the teeth of old horses, are due to entire wearing out of the enamel at that place. Malformations occur in which there is no dentine formed between two layers of enamel in the molars. This causes splitting of the teeth, and caries starts from this cause.

Dr. Hollingworth, 'Do the incisors ever get too long?'

ANSWER. Sometimes, and especially after much trimming of the molars, the latter do not touch without too much lateral motion of the jaws. When the mouth is in a state of repose, the molars do not touch together, in the normal condition."

Dr. Thompson asked the cause of chisel-shaped teeth.

ANSWER. There is too much difference in the set of the molars in the two jaws. The obliquity of the table surfaces increase until lateral motion is retarded and then prevented. The teeth being cut off until lateral motion is possible, they improve in shape for a while, but the deformity remains, and the teeth tend to get into the same shape again. I have seen cases where this occurred on one side from partial paralysis of some of the muscles of mastication, the jaw being drawn to one side."

The committee on constitution and by-laws reported by their chairman, Dr. Williams. He read the amendments proposed, and moved that they receive the sanction of the Association and be laid over to the next meeting for adoption. Seconded by Dr. Withers.

After some discussion it was decided, on motion by Dr. Ryan, seconded by Dr. Scott, to amend the proposed amendment to the by-laws, by adding a clause

*To be printed in June issue.

to the code of ethics, prohibiting the offering of gratuitous advice and receipts through the veterinary columns of agricultural and other non-professional journals.

The original amendments as amended, were then given the unanimous sanction of the Association, and will be acted on finally at the November meeting.

In order that the members of the Association might become familiar with the proposed amendments before the November meeting, it was moved by Dr. Williams seconded by Dr. Withers, to have the constitutions and by-laws, as altered by the proposed amendments, printed in pamphlet form for distribution to all members of the Association.

It was suggested that a list of the officers of the Association, from its organization to the present time, be included in this reprint, together with the roll of membership.

Dr. Williams included this in his motion, approved by his second. The motion was carried and the matter of reprinting referred to the committee appointed at the last meeting for that purpose.

Thanks for the use of the hotel parlors were voted the proprietors of the house, and Dr. Williams was appointed to convey them.

The Association adjourned to meet in Chicago, in November.

J. F. PEASE, D.V.S.
Recording Secretary.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening, Mar. 25, 1891, President Thomas Blackwood in the chair.

Members present: Drs. Blackwood, Bunker, Emerson, Hadcock, Howard, Marshall, Peterson, C. Winslow, and the Secretary.

Honorary member: Dr. Stickney.

Minutes of the previous meeting read and accepted.

Moved by Dr. Peterson and seconded by Dr. Emerson, that the Secretary act as a committee of one to attend to the details of the annual meeting and dinner. Carried.

Moved by Dr. Bunker, and seconded by Dr. Hadcock, that the annual meeting and dinner be held at Young's Hotel. Carried.

Dr. Bunker then read a paper to which he had not given a title. It was a plea for more brave, honest, earnest co-operation among the members of the Association in doing their part in the furtherance of the public good, in spite of mercenary interests or reasons of policy.

After Dr. Bunker ceased reading, a pause followed which was broken by the essayist, who went on to speak of the importance of our profession, and that all its members should work for its recognition by Boards of Health, and we should unite in expressing our disapprobation of the Cattle Commissoiners' inefficiency and their having no rules for the disinfection of infected premises, dealing with suspicious cases, and the like. It is time this Association was up and doing in remedying existing evils, and getting better recognition of the value of our Association.

Dr. Winslow said that he thought that in time owners of animals and Boards of Health would consult veterinarians upon the best course to pursue in outbreaks of contagious animal diseases, without seeking advice from the Cattle Commissioners.

Mr. Stickney thought that the Cattle Commissioners' lease of life would soon be self-terminating if it continued in its present course.

Dr. Marshall thought the members of the Commission were very reasonable in their treatment of owners of stock.

Dr. Stickney said politics had too much to do with their action, and it makes a great deal of difference who owns the property upon which the Commission is administering. Even if they appreciate the conditions of things, which they often do not, they do not have the pluck to stand up and grapple with matters as they should. One member in particular might as well be a mop, for anyone could wring him out.

Dr. Howard asked the essayist if he recommended our acting as individuals, or as an Association?

Dr. Bunker advised acting as individuals, but as members of the Massachusetts Veterinary Association.

Dr. Howard said that our Association had investigated the Cattle Commission once, but he did not see that much had come of it.

Dr. Marshall moved that the essayist be given a vote of thanks. Seconded and carried.

Dr. Hadcock reported a case of melanosis in a roan horse. First noticed a swelling of the abdomen on the near side, one Thursday; gave a cathartic ball which acted nicely the next day, Friday, but he did not see him until Saturday. Saturday, the abdomen was very much swollen, and horse had colic pains. Sunday morning Dr. Blackwood saw him in consultation; abdomen was very much distended with fluid; it was proposed to tap him, but after talking it over decided not to, horse showing symptoms of enteritis. He died Sunday night. Post-mortem made Monday morning. The abdomen contained a quantity of dark-colored fluid and melanotic tumors were found in the mesentary, liver, and spleen. The mesentary looked like a huge black sponge.

Dr. Peterson reported a case of fatal epistaxis in a heifer, at Sudbury. When Dr. Peterson arrived at the farm where the heifer was owned, he found a small stream of what looked like arterial blood flowing from both nostrils; she had bled about a bucketful. He injected six ounces of tincture of perchloride of iron into her nostrils, used cold water and tried plugging but could not check the hemorrhage, she had lost two bucketfuls of blood by the time he left, and died the next day. He did not have an opportunity of making an autopsy, but she was opened by her owner, who said that he found no lesions to account for the trouble, still a professional man might have.

Dr. Bunker spoke of a horse which came under his observation where pieces of sponge had been plugged up both nostrils to stop the noise of whistling, which it effectually did.

Meeting then adjourned.

AUSTIN PETERS, *Secretary*.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Keystone Veterinary Medical Association was called to order at 8. P. M., Dr. Hoskins in the chair.

The following members answered roll-call:

Drs. Bridge, Weber, Hoskins, Goentner and Drake.

The minutes of previous meetings were read and adopted.

The President, in absence of Board of Trustees, appointed Drs. Goentner and Drake to act with Dr. Weber on the resignations of Drs. W. L. Zuill, W. H. Ridge, Chas. S. Williams and C. H. Magill, with the following result:

REPORT OF THE BOARD OF TRUSTEES.

PHILADELPHIA, Pa., April 4, 1891.

We hereby report that we recommend the acceptance of the resignations of Drs. W. L. Zuill, W. H. Ridge, Chas. S. Williams and C. H. Magill.

(Signed) S. E. WEBER,
M. W. DRAKE,
CHAS. T. GOENTNER.

It was moved and seconded the above be adopted. Carried.

Dr. Hoskins asked if mares had an increase in temperature during the period of gestation. Dr. Bridge answered, that he had noticed an increase of two degrees for the first two months.

Dr. Hoskins stated at seven months his mare had a temperature of 101 1-5 degrees and continued about the same until parturition.

Dr. Bridge said cattle always had a rise in temperature during gestation.

Dr. Hoskins read a paper before the Association, entitled, "The Necessity of a Uniform Standard and Title of Veterinary Medicine in America," which was well written, touching every point on the subject. A lively discussion followed. The essayist desired the Keystone Veterinary Medical Association to be among the first to advise a single standard of examinations in veterinary medicine and place itself on record in this direction. He thought other Associations would do the same, and the colleges would ultimately make recognition of it and extend their course to at least three sessions.

Dr. Goentner was doubtful if we could in any way influence the schools.

Dr. Glass, who had been called to the chair, took this opportunity of assuring the Association that the Veterinary Department of the University of Pennsylvania was always desirous of retaining the good-will of the profession, and did not wish at any time, or in any way, to run counter to the best views of Veterinary Associations. The recent move taken by the officials of that institution, was purely a personal matter, and not a college feeling. Dr. Weber was glad the Keystone Veterinary Medical Association was the first to advise the adoption of these measures, but could not see how it could be carried successfully to an end; and in recognizing the higher standard of the University of Pennsylvania, wished that others should have the same. He asked, "are the graduates of agricultural colleges recognized by the United States Veterinary Medical Association as regular graduates?"

Dr. Hoskins answered him "yes; that they were admitted to membership at Chicago September 17, 1881."

Dr. Bridge thought the step a desirable one, but it was difficult for the Association to express its opinion to the colleges for a higher standard of requirements.

Dr. Weber spoke of the State joining the colleges in taking this step.

Dr. Goentner said a body of qualified men to start a National Board of Examiners, and not allow recent graduates to enter unless they could pass the Board. If the different Associations would join and work together the point might be attained.

Dr. Hoskins said the people could be reached through public opinion; that the schools would not listen to the Keystone Veterinary Medical Association, but would, if all the societies would join and work for the same point. That if the Keystone Veterinary Medical Association would adopt a rule and not admit a member unless a three years' course had been pursued, he would vote for it.

Dr. Glass' views of the matter were that it should be a National Board of Examiners and not a State matter, as it would get into politics and favors be shown in granting the positions. Get the veterinarians at large interested; push it and keep at it.

Dr. Glass then compared the number of University of Pennsylvania graduates as smaller compared to the Canadian schools, as a result of the three years' course. He thought it would be advisable to stamp out all the schools and form a limited number of government schools, the same as in Germany; inasmuch as the veterinarian is the preventive and the physician the curer of disease.

Dr. Goentner made a motion that a committee be appointed to draft suitable resolutions, embodying the views of the Keystone Veterinary Medical Association, on the subject of a higher standard of veterinary medicine and a single Board of Examiners.

Seconded by Dr. Hoskins. Carried.

The President appointed the following committee:

Drs. Glas, chairman; Goentner and Weber.

Election of officers. The Secretary's place now being vacant, Drs. Kooker and Drake were proposed.

Dr. Kooker's name being withdrawn at his own request, Dr. Drake was elected by acclamation.

The meeting then adjourned.

M. W. DRAKE, *Secretary*,

OBITUARY.

E. NOSTRAND, D.V.S.

After a practice of over fifty years in the city of New York, Doctor Elbert Nostrand died of pneumonia on April 14th, 1891, at the advanced age of eighty-three years and one month. Born at Springfield, Long Island, he at an early age began practice in New York city, and was one of the first American veterinary graduates, receiving his diploma in 1865; from the New York College of Veterinary Surgeons. Dr. Nostrand even at his advanced age, in fact to within a few days of his sickness, was still in active practice, and many New Yorkers have often met him but a short time before his death while in the performance of his professional duties.

NOTICE.

POSITION WANTED.

Graduate 1875, officially employed, wishes to occupy his vacation as a manager or assistant. Apply, stating terms, to T. J. M. care of Sabiston & Murray, 916 Sixth Avenue, New York.

AMERICAN VETERINARY REVIEW,

JUNE, 1891.

EDITORIAL NOTICE.

OUR NEW DEPARTURE.—For the more than fourteen years that the publication of the REVIEW has been entrusted to our care we have endeavored to realize the importance of the duties thus imposed, and have designedly neglected nothing calculated to make it the true representative of the American veterinary profession; and to this end have performed, to the best of our ability, the often arduous and not always pleasant duties of editor, publisher, proof corrector, mailing clerk, financial overseer, etc. Our efforts would probably have proved futile, had we not received at the hands of the profession, especially during the last two or three years, the valuable assistance that our colleagues of North America have so kindly given us, and to which the greatest part of the success of the REVIEW belongs. Thanks to them, our undertaking has so considerably developed that an entire re-arrangement of our business department became a necessity, and has been under consideration for some time. Having at length assumed definite shape, we are pleased to make the following announcement to our friends, readers and patrons:

The various positions that we have attempted to fill since the appearance of the first number of the REVIEW have been divided, and notice is hereby given, that while we have reserved for ourselves and the corps of our professional assistants the editorship of the REVIEW—and therefore look as before for all papers, communications and reports of societies from our colleagues—all matters relating to publication have

been placed in the hands of the house of Sabiston & Murray, 916 Sixth Avenue, New York City, to whom application for subscriptions, reclamations and matters of a financial nature will be referred; the advertising department remaining, as in the past, under the care of Mr. W. P. Cleary.

We hope by this new departure to better accomplish the purpose had in view when the publication of the REVIEW was undertaken, and above all to remove further cause for the well-grounded complaints that had their origin in the errors and omissions consequent upon the attempt to transact the business of the REVIEW in an office already overcrowded with other matters.

ORIGINAL ARTICLES.

KOCH'S METHOD WITH TUBERCULOSIS AND THE EARLIER USE OF CORRESPONDING PRODUCTS IN OTHER CONTAGIOUS DISEASES.

BY JAMES LAW, F.R.C.V.S., Cornell University, Ithaca, N. Y.

(A Paper read before the New York State Veterinary Medical Society.)

This paper has been generally accepted as crediting its authors with the discovery of this principle of immunity by chemical products of the life of the germ, a principle which I had set forth so extensively in its bearing on the same disease five years before. It is true that I did not experiment with sterilized laboratory cultures, but assumed as self-evident that the diseased germs grown in a suitable medium and with a limited supply of air, would elaborate the same poisonous products.

EXPERIMENTS ON PIGS BY DRS. SALMON AND SMITH.

In the report on hog cholera issued by the Bureau of Animal Industry in 1889, Drs. Salmon and Smith record the result of injection with sterilized virus on twenty-two pigs, which at first sight is anything but reassuring as to the value of such products in protecting those animals against the disease. Of

the whole number treated with the sterilized virus, twenty died and only two resisted the disease when subsequently exposed. The following gives the results in tabular form :

Experiment.	Number of Animals.	No. of Times Injected with Sterilized Virus.	Intervals between such Injections.	Total Sterilized Virus used for each Pig.	Exposure to Infection after Last Injection with Sterilized Virus.	Mode of Exposure.	Died.	Did not sicken.	Intervals between Exposure and Death.
			Days.		Days.				Days.
1	2	2	8	18 cc.	10	Fed diseased Intestines of Pig. Put in Infected Pen.	2	.....	10-17
2	{ 3	2	3	19 cc.	15	Put in Infected Pen.	3	.....	31, 98, 113
	{ 2	Check cases.	.....	.....	.....	"	2	.....	14, 19
3	{ 2	2	5	20 cc.	22	"	2	.....	29, 83
	{ 1	2	5	20 cc.	57	"	1	.....	34
	{ 2	2	5	20 cc.	22	"	.....	2	.....
4	{ 2	4	2, 2, 2	33.5 cc.	8	"	2	.....	15, 19
	{ 2	3	2, 2, 2	25.5 cc.	10	"	2	.....	13, 15
	{ 2	2	2	18 cc.	8	"	2	.....	13, 15
	{ 3	Check cases.	.....	.....	.....	"	3	.....	13, 19, 39
5	{ 5	2	3	40 cc.	4	"	5	....	{ 19, 19,
	{ 1	2	3	33 cc.	4	"	1	.....	15, 16, 18
	{ 1	Check cases.	.....	.....	.....	"	1	.....	18
								.....	18

There are some points to be noted in explanation of the terrible mortality.

First : The excess of the sterilized virus used, from 18 cc. in two doses in eight days to 40 cc. in two doses in three days. Because a pig suffering from hog cholera has a great excess of these poisons in its system it does not follow that the amount is essential to secure immunity. The single vaccine vesicle protects the average system. Further, in a disease which, like hog cholera, produces congestion and even necrotic ulceration of such vital organs as the intestines and mesenteric lymphatic glands, the ptomaines are likely to endanger lesions of the parts that may prove lasting, and the embryonic tissue in such lesions would be especially open to colonization by the microbe. We see an example of this in the predisposition to tuberculosis where there is any inflammation of the air passages. It is notorious that after passing through hog-cholera a pig rarely thrives. It is desirable, therefore, to use small doses only of this chemical poison for the pig, and to avoid, if possible, the production of lesions which would virtually predispose to the disease.

Second: In the more fatal cases the exposure to infection was made so early as to forbid the idea that the system had had time to have completely rid itself of the poisonous chemical products, and much less to have risen over their profoundly depressing effects. The intervals of four, eight and ten days respectively between the injection of large doses of the chemical poisons and exposure to infection suggests the presence of that toxic effect of the ptomaines which lays the system open to the microphyte. One hardly wonders that these subjects died in periods varying from thirteen to nineteen days thereafter. It is noticeable that the two pigs that escaped the infection, and the six that survived 29, 31, 34, 83, 98 and 113 days respectively, were those that had at once had a small amount of the sterilized virus, 19 cc. and 20 cc., and that had exposure to infection delayed longer (15, 22 and 57 days) after such injections had been made. It may be that immunity by this means is not safely attainable on a large scale, yet even this dreadful table bears testimony to the operation of the principle of protection by chemical products of the germ, however unfavorable the conditions. The energy of the disease was abated, and the acute disease was exchanged for the sub-acute and chronic form in all cases in which the sterilized lymph was moderate in amount, and the subsequent exposure to infection delayed.

* Third: It is to be noted that in the case of these experimental pigs the test was a severe one. The ingestion of the diseased bowels ten days after the pigs had been injected with the prostrating ptomaines, and followed by exposure in an infected pen, was a test of extraordinary severity. Again in the other cases the reporters say that the infection in the pens was unusually intense, the experimental pigs being constantly surrounded by the sick and dying, at one time fifteen pigs dying in three weeks, and at another "pigs died almost every day" in the infected pen.

Taken all in all these experiments sustain the doctrine of protection by the ptomaines, although they do not show a large percentage of survivors.

EXPERIMENTS WITH LUNG PLAGUE OF CATTLE.

Inoculations with Sequestrum.—My next essay in this field was with lung plague, and my first experiment was made by diluting and inoculating the juice squeezed from a sequestrum from the lung of a cow which had been attacked at Orange, N. J., August 27th, 1881. The cow was killed January 30th, 1882, and January 5th I inoculated three yearlings by injecting forty drops into each lung of each animal, using a hypodermic syringe with long nozzle, which was passed through the intercostal spaces. Two of the yearlings coughed a few times, but all of them took to eating heartily. One, which may be called No. 1, was suffering from a chronic bronchial catarrh and one grain of the sequestrum was inserted into a subcutaneous pouch in front of its shoulder. As the time of inoculation all had a temperature of 103° F. For two days there was a very circumscribed crepitation in the seat of the inoculation, but on the third or fourth day this had disappeared in all alike. The temperature of No. 1 remained at 103° F.; that of Nos. 2 and 3 went down to 102° F.

All remained without further change for six weeks, and on February 16th I again inoculated each in the right lung with forty drops of the slightly diluted juice of a sequestrum taken February 15th from a New York city cow by Dr. James D. Hopkins. This cow had been sick eleven weeks before her slaughter. Seventeen days later I found the temperature of Nos. 2 and 3 had risen to 103.5° F., and this it did occasionally for eight days, but there was no other indication of illness.

March 16th I inoculated these three and another as a test case, (No. 4.), in the right lungs, with the freshly exuded lymph from the lung of a cow which had sickened March 13th and was killed March 14th. March 23d, No. 4 coughed while temperature was being taken, and this was repeated daily until the 26th, when there was slight crepitus in the right lung. Temperature 103.75° F., pulse 60, breathing quiet. Temperature on the 25th had been 103.5° , and by April 1st and 2nd had reached 105.75° F. There was slight dullness

over most of the right lung, and swelling of the right side of the chest. It ate and ruminated, but was losing flesh. (Nos. 1, 2 and 3 showed no reaction).

Necropsy of Check Case No. 4.—This subject was killed April 22d, and showed on necropsy the right side engorged from shoulder to flank with the usual straw-colored lung plague exudate, the pale yellow muscle and bands of connective tissue being pushed apart so as to give the tissues a honey-combed appearance, excepting in the central part around the seat of inoculation, where they were condensed and fibrous, like an organizing false membrane. The right pleural sac contained a considerable liquid exudate, and false membranes covered the lower portion of the pleura and pericardium. The lung was normal, the inoculating nozzle having manifestly failed to enter it. The subdorsal lymphatic glands were enlarged, gorged with blood, and showed a granular appearance.

NECROPSY OF NO. 1.

On April 13th I had already made a necropsy of No. 1, but found only the lesions of the original bronchial catarrh and two small curdy-looking masses—manifestly tubercle—in front of the left leaflet of the diaphragm and in the spleen respectively.

Inoculations with Sterilized Exudate from Recent Lung Plague.—March 22d I inoculated two yearlings (Nos. 5 and 6) in the tail with a drachm each of the exudate taken from a recent case of lung plague, and heated for some time to 180 F°. There issued a slight swelling in each in the seat of inoculation, but no general reaction. Thirteen days later, (April 4th) these were tied one on each side of the sick check case, No. 4, and kept there until the latter was slaughtered, April 22d. April 9th to 15th, the temperature of both rose to 103°, 104°, and in the case of No. 5, on the 14th and 15, to 105° and 106°, then subsided to the normal, (102°). There was no indication of any lung disease.

(*To be continued.*)

DISEASED MEAT AS FOOD FOR HUMAN CONSUMPTION.

By DR. M. WILSON, Mendota, Illinois.

(A Paper read before the Illinois State Veterinary Medical Association).

The subject of my paper, "Diseased meat as food for human consumption," is not only a broad one, but one on which many different opinions are held, and one of which, for obvious reasons, not very much can be definitely stated. It is not my intention to take every disease and show, as regards the affected flesh, its fitness or unfitness for human food, but to confine myself to one or two of the more important specific diseases.

As science progresses more light is constantly being thrown on the origin, cause and nature of these diseases, from which deductions are constantly being made regarding their fitness for human food, and ways and means devised for their treatment or eradication. The similarity of many diseases affecting man and those affecting animals has led to investigations, which have resulted not only in proving them analogous, but in preventing their spread from one to the other by quarantining and prohibiting the use of any medium of infection, such as the milk and flesh.

The dangerous role that the meat of diseased animals plays in causing disease amongst its consumers was suspected, if not actually proved, centuries ago by the Jewish rabbis. They laid down a strict code of inspection, by especially qualified persons, of the bodies of animals permitted for consumption; the rule of this code being still observed at the present time among the orthodox sects of the Jews in many countries. In this code certain definite disorders are mentioned in great detail, some of which can, without difficulty, be identified under more modern names. The directions are so minute and clear that any one without much knowledge of anatomy or pathology, can, on examining the viscera of the animal, detect the disease.

According to that code, the body of an animal showing on inspection disease of one kind or another in the viscera is un-

clean and condemned in totality as unfit for human food. Amongst these diseases there is none more clearly described than the disease that is to-day known as *tuberculosis*.

It must certainly seem strange that what has been considered for ages as dangerous by one sect of people, should have been and should continue to be entirely indifferent to another sect of people. This is not merely a question of religious rites; the rabbis of former ages were, like their colleagues in profession, the monks, known to possess great proficiency in medicine. They were, as is well shown in their writings, learned in anatomy and pathology, and we have every reason to assume that the rules concerning disease in the bodies of animals, and the prohibition of these for consumption, must have been founded on the experience that the consumption of the flesh of such animals is fraught with danger. If there is one disease about which proof is definite and absolute that it is a disease communicable from animal to animal by inoculation and by ingestion; if there is a disease about which with precision it has been shown that it is caused by a well characterized specific organism, the tubercle bacillus—that disease is tuberculosis.

No one who has any right to have an opinion about the matter doubts that be it tuberculosis in cattle or be it tuberculosis in human beings, we are dealing with one and the same disease, due to the same cause, viz., the tubercle bacillus. It matters not whether the tubercle bacillus be taken from a scrofulous gland (which is merely tuberculosis localized in certain glands), or from a tubercle in the lung in general tuberculosis, the result of inoculation in animals is the production of general tuberculosis. Although the direct experimental proof that bovine tuberculosis is directly transmissible to the human subject by ingestion, is for obvious reasons impossible, there are a good many facts going to show that such is very probably the case.

In the first place there is the experimental fact that animals susceptible to tuberculosis contract the disease when the bacilli in whatever form are introduced into their digestive tract; again, we have cases of tubercular meningitis in

young children whose parents are by no means tubercular, and who have no hereditary taint. In some of these cases, where no hereditary taint exists and no evidence of transmission from a human source, have we not a very possible source, viz., infection through milk from tubercular cows.

Considering the number of cases of tubercular animals among dairy cows and the experimental proof that tubercles in the milk glands void bacilli in the milk, a large amount of this milk must necessarily find its way into households for human food ; hence we have a very possible source for the number of tubercular cases in children, they being the chief consumers.

In many cases of tuberculosis in cattle we not only have the lungs affected, but also the liver, spleen and lymphatic glands, and even the marrow of bones has been shown to be affected ; and do not all these facts conclusively prove that the tubercular virus is distributed through the body by the vascular system. No other means than the blood can distribute it to such distant localities, otherwise so independent of each other, as the lungs, external lymph glands and the marrow of bones.

This conclusion at once disposes of the assumption occasionally made that if in an animal the lungs and the thoracic glands are the only organs visibly affected, the removal of these parts is sufficient to insure the safety of the rest of the body as far as its usefulness for human consumption is concerned.

We may not be able to discover by the naked eye, nor the use of the microscope, the presence of bacilli in the connective tissue or muscle. Yet, are not all these parts supplied with blood, and at the time of killing may not the virus be coursing through the vascular system on its way to more distant localities, such as the marrow of bones destined in the natural course of things to become the seat of tubercular deposits ? Thus it must seem clear that no part of an animal in which even a single organ is affected with tubercle can be held clear from the virus.

I do not think that any one who has the welfare of his

fellow creatures at heart would say that food tainted with tubercular virus was fit for human food, or at least free from danger. Of course, I do not mean to say that in every case where tuberculosed meat is eaten that tuberculosis must necessarily follow, but there are so many cases of persons in a temporary low condition which predisposes them to infectious diseases, such as typhoid fever, malaria and diphtheria, that in some of these cases the introduction of the bacillus of tuberculosis might and probably would act as an exciting cause of the disease. It is not rare to come across a single member of a family in which there is no predisposition nor hereditary taint to this disease who becomes a tubercular patient through temporary weakness from other diseases, or a slight touch of bronchitis, or anything which might or might not cause an abrasion of the mucous membranes of the lungs or bowels, but which seems to make the body a fitting habitat for the introduction and propagation of the virus of consumption.

In giving first importance to the danger accruing from the consumption of meat derived from animals affected with tuberculosis, the danger of communication to consumers of disease other than tuberculosis must not be lost sight of. Although tuberculosis, from its wide distribution among cattle, ranks among the first, there is another disease that is becoming more and more spread, and the nature and cause of which we are becoming more acquainted with—that disease is actinomycosis.

Since the discovery of its specific organism, the actinomyces or ray fungus, we are better able to discover and appreciate its wide distribution, and cases, which were formerly put down under the head of tuberculosis, are now recognized under the microscope by the presence of the ray fungus, and of course the absence of the tubercle bacillus. The fungus in this disease causes nodular growths, which have a tendency to enlarge, suppurate and break down; their occurrence being common in the tongue, by which we have enlargement of this organ, from its firm fibrous appearance being known as wooden tongue; also on the gums, other parts of mucous

membrane, in the lungs and affecting the bone, giving it a honeycombed appearance. Its presence in the lungs can be easily distinguished from that of tuberculosis by microscopic examination. This disease also affects human beings, and here it is a most serious malady on account of its prolonged and painful character, and because it generally terminates fatally. Here again it is easily recognized microscopically by the presence of its specific organism, and by this means we have the proof of its distribution among human beings.

Of course while yet but little was known of this disease we heard of very few cases of its appearance in human beings, but now every once in a while we see cases reported in medical journals and published reports. As to the nature of its communication, quoting from Dr. Fleming's work on Actinomycosis, he says: "As to the manner in which, and the channel by which, the fungus invades the tissues, there is no satisfactory evidence. It is, however, extremely probable that it enters in the form of spores, through a wound, abrasion, fissure, or even by means of the delicate mucous follicles of the membrane lining the lips, mouth, pharynx and nostrils, in fact any part of the digestive or respiratory tract."

Dr. Klein speaks of two cases of actinomycosis of the bowels in man, associated with severe suppuration from the bowels, and what is more probable than to suggest that these were caused by consumption of flesh derived from animals affected with actinomycosis. I have known of cases of this in cattle, which showed symptoms of the disease so plainly, accompanied by so much emaciation, so as to make them unfit for shipping to stock yards, being bought by men who claimed they used them for the hides and tallow. As for tallow there was not enough in them to grease a wagon, and if the hides were worth the price paid for the animal it would pay to sell hides. What then was done with them? More than likely they were slaughtered and dressed and sold for human food among the poorer classes in our mining towns. That this should be prohibited goes without saying.

Another specific disease of cattle is foot and mouth disease; one dependant on a specific microbe for its origin, and

this microbe being contained in the vesicles that form on the various parts of the body, especially on the mucous membrane of the mouth and alimentary canal, and on the finer portions of the skin of the teats and digits. It is not, as is assumed by some, merely a local eruption in the mouth and on the feet, but a general constitutional, acute, febrile disorder, in which the eruptions and constitutional disturbance show that we have here also a distribution of the virus through the system. This then should be sufficient to condemn the carcase for human food, since it has been clearly proven that infection from this disease can be carried to the human subject.

In what is known as the Dover outbreak in 1884 we have conclusive proof of the transmissibility of foot and mouth disease from cattle to human beings through the medium of the milk. The symptoms in human beings were inflammation of the throat accompanied by enlargement of the glands of the neck, *vesicular eruptions* preceding and accompanying the inflammation. In some instances the feet of those who suffered were swollen and painful, and in one case eczema occurred between the toes. The number and similiarity of the cases aroused suspicion, and on inquiries being made the disease was found over the course of one particular milkman, and in almost every case where he supplied milk there were one or more cases. This led to further investigations, and the milk used in these cases was found to have come from a dairy in which the animals were affected with foot and mouth disease.

Perhaps if investigations were made a little further than at present, we might have more light thrown on some of the difficult problems in the etiology of throat affections. Other diseases, such as anthrax and *trichina spiralis* in swine, need no proof, neither of their transmissibility, nor their effect when introduced into the system in an uncooked state. There are still a number of infectious diseases, such as cattle plague, pleuro pneumonia contagiosa, swine plague, puerperal septicæmia, etc., of which as yet nothing is known as to their direct transmission to the human subject, but that does not make the flesh any more wholesome.

It has been proven recently that as microbes increase in an animal body they elaborate chemical substances that, coursing through the blood and tissues, cause the symptoms of the disease. This toxic substance has been isolated and injected, and has been found to produce the same symptoms as those produced by the microbe, but in a less degree, and the intensity of these symptoms can be regulated by the amount of the substance injected, and I do not think we can say that animal tissues containing these toxic materials are entirely harmless when used for human food, although that infectious disease may not have been found to be transmissible to man.

This, gentlemen, ends my paper. Hoping it may lead to some instructive and profitable remarks, I thank you for your kind attention.

FRACTURES.

By H. THOMPSON, D.V.S., Paxton, Ill.

(A Paper read before the Illinois State Veterinary Medical Association).

Not knowing what other subject to present to you to-day, I have concluded to give you a report of several cases of fractures that have occurred in my experience.

They tend to show to what extent nature will repair damage with a little help from man, and also that we should not be too hasty in ordering the destruction of poor dumb brutes. Their lives are as dear to them as ours are to us, and not only that, but their too frequent destruction places us in a bad light before the public, who are only too ready to call us butchers, instead of thinking us humanitarians.

Case I. The first case was a black mare six years old, with a comminuted fracture of the os suffraginis. She had been staked out with 75 or 100 feet of rope, and about a week before I saw her, had pulled the stake up and run across the field. The rope became twisted around the fetlock and threw her, and after that when she walked the foot would swing around and the animal could not put her weight on it.

The owner, thinking it nothing but a severe sprain, turned her loose. But not improving after a week's time, I was called in and found the above condition, the leg being swollen from foot to elbow.

Not having brought slings and being twenty-two miles from home, I took two singletrees and a piece of rag-carpet and erected a set of slings, using a common buggy harness. Washed the leg with a solution of hydrarg bichlor., 1 to 1,000, packed the hollow of the heel with cotton-batting and bound the limb with strips torn from a sheet. I then took some pieces of shingles and cut them the desired width and length and splinted the parts. In seven weeks I removed the bandages and rubbed all the limbs with lin. saponis, as she appeared to be stiff, and let her out of the slings. This was in the summer; by spring she was able to go to the plow and do a full day's work.

Case II. Brown mare, transverse simple fracture of ulna caused by being kicked. This being a place impossible to bandage, I put her in slings and putting on a blanket, strapped it on in front and around the chest, back of the elbow, first washing the parts with the bichloride solution.

In six weeks called to see the animal, as the owner said she wanted to get out of the slings. Found the parts strongly united and took her out of the slings, and after a run of six months she was taken up and put in front of a sewing machine wagon and rendered valuable service. In a year's time absorption of the parts had taken place so that the injury was hardly noticeable.

Case III. A fine gray Percheron mare, weight between 1600 and 1700 lbs. Found an oblique fracture of the humerus, the shoulder and leg being much swollen. I had her put in slings with a blanket strapped over the injury, and had the parts constantly wet with hot water. In a week's time stopped the hot applications and put on a dry blanket strapped as before, and put a bandage around the whole chest and over the injury. Left her in the slings about eight weeks and she made a good recovery. This injury was caused by running against a tree and then sliding about ten feet.

Case IV. A dun-colored pony, a gelding seven years old, and a very discouraging looking case. He had a comminuted fracture of the os suffraginis, rupture of the flexor tendons and two wounds over the fetlock, but not piercing the fetlock joint. It was caused by the pony running away and kicking himself loose from the buggy. I advised the destruction of the animal, as he was not worth the trouble and care necessary to restore him to usefulness. But the owner ordered treatment, so we put the pony in slings, washed the leg thoroughly with the bichloride solution, filled the openings with iodoform, covered the leg with absorbent cotton and iodoform and bandaged from foot to hock. I then put an iron splint from the foot to the hock and covered the same with plaster bandages.

In a week's time, as pus was making its appearance, I removed the bandages, syringed the openings with the solution, and repeated the dressings and bandages. In another week removed the bandages and found evidences of pus forming at the lower part of the fetlock. This I opened freely and syringed out the parts with the bichloride solution, returning the bandages as before. Removed them the next week and as the wounds were nearly healed, dressed them as before and replaced the bandages, and did not remove them for two months. Then had the leg well rubbed with soap liniment and let the pony out of the slings, when he went down on the fetlock. Had a blacksmith cut the foot down and put on a high-heeled shoe and found considerable improvement. Had the leg rubbed daily with iodine liniment and then turned the pony out for five months, after which he was taken up and used as a family horse. Later the owner realized as much from him as from sound ponies at the same sale.

Case V. A six-months-old colt with simple oblique fracture of the tibia. It was in August, and the colt had been turned out with other colts. He was found in the evening going on three legs. The next day I saw him and found well-marked crepitations and considerable swelling. When put in slings he would throw all four feet off the

ground. So we tied his head up high, built a partition close up on each side and put a rail behind him. We then staked a board, a foot wide and one inch thick, upright between his feet and lengthwise of the body, and dug a hole one foot deep for the broken limb to hang into, as it seemed impossible to bandage it. The board kept the other foot from getting into this hole.

In two weeks everything seemed progressing favorably, and in a month we removed from the slings, the bones having united. On Christmas day, being out that way, I called and found the colt running in the pasture and showing very little swelling except just where the bones had united.

MALARIA IN HORSES.

BY J. F. PEASE, D.V.S., Quincy, Ill.

(A Paper read before the Illinois State Veterinary Medical Association).

After deciding to present this subject to you at this meeting, I noticed an article by Dr. Griffin, U. S. A., on this same subject, in the *Veterinary Journal*. This, I believe, is the first mention of the subject I have seen in veterinary literature.

While attending lectures at the American Veterinary College, I remember one of the professors suggesting the probability of horses contracting malarial fever, and urging those who might practice in malarial districts to be on the alert for possible cases. Coming, as the writer had, from the banks of the Mississippi River, where the miasma from the overflowed bottom-lands causes so much malaria in the human subject, attention was paid to the suggestion, but no suspicious case presented itself until July 8th, 1888.

At that time I was called to see a pony mare, belonging to a lady, who watched carefully every motion of her patient as though she had been human. From the history given of the case, it would seem that the mare had had an attack of catarrhal fever, from which she was making a slow recovery. She was in good flesh, but the coat was staring, and the appetite was very capricious. The bowels were regular enough, but the urine was highly colored. The mouth had a slightly sallow or bilious appearance.

She was put on ʒi. f. e. nux vom. daily, in three doses, before feeding. The next day she appeared to be much better, ate ravenously, and ran about in the yard. But the second day she ate nothing; the third day seemed better; the fourth day, apparently well; and so on, until the periodicity was noticed.

At my suggestion, her actions were more carefully noted from day to day, until it became evident that every third day, at about 7 A.M., she had a severe chill, followed by rise of temperature; that the following day she would have a slight chill, but would brighten up about noon and begin to eat, and that the intermediate day she would be all right.

I diagnosed malaria about the 18th of July, and wanted to begin the treatment at once, but when the time came the animal seemed better, and the owner wished to wait a little longer.

Regularly enough, however, on the morning of the 21st, the heavy chill came on, and on the evening of the 22nd, after the light chill had passed off, I gave ʒi of calomel, followed in a half hour by one pint of castor oil.

On the 23rd, the well day, beginning at noon, I had a half ounce of quinine and ʒij of f. e. digitalis given in five doses, two hours apart. Had the satisfaction of seeing her miss the heavy chill the next morning. The same doses were repeated, and the light chill was omitted. I then put her on ʒi of cinchonidia, ʒss. doses of nux vomica, three times daily, with the result of a complete recovery.

The outcome of the treatment seemed to confirm the diagnosis, but the form of intermission was still entirely new to me. Afterward I found a number of different forms of malaria described by Bartholow, in his "Practice of Medicine."

First, he describes the simple forms,—the *quotidian*, or every day intermitting form; the *tertian*, or every other day form; and the *quartan*, with two days free from fever.

Next he speaks of the doubled forms, where two series of intermissions obtain at the same time. Among these, the *double quartan* has a severe paroxysm one day, a light paroxysm the next day, and a day without fever. This describes our case exactly.

The second case was that of a roan gelding, used as a delivery horse. He was seen first about noon, Oct. 23d, 1889, when he was just over a chill. An examination of the chest was made, but owing to the horse being quite fat it was unsatisfactory. Diagnosis was withheld, and the owner warned against a possible case of pneumonia. Had aconite administered every hour, and saw him again at 7 P.M. Symptoms about the same, e. g.—temperature, 106.6° ; pulse, 70; coughing some.

Prescribed verat. veride and quinine in small doses four times daily, with the result that the pulse steadily declined in strength and frequency, while the temperature fell to 103.5° , but gradually rose to 105° on the morning of the 25th, then receding to 104° , when an acetanilid pill brought it to 100° in a few hours. The horse then seemed perfectly normal, except for the cough; ate well and looked bright; pulse, 38. He was thinner than at first, and auscultation was more successfully performed, but gave nothing abnormal. The verat. and quinine were repeated in 3i doses of the former, and 3ss. of the latter, four times daily.

Being called out of town I did not see the case again until noon of the 28th. Found the temperature 102.5° . The groom said the horse had had a chill two days before and still coughed some. Changed the veratrum for digitalis. The pulse kept nearly normal, but the temperature varied as follows:

October 28th, 10 P.M., 102.2° ; 29th, 9 A.M., 100.6° ; 9 P.M., 102.2° ; 30th, 9 A.M., 101.0° ; 31st, 9 A.M., 102.4° ; chill earlier; 9 P.M., 101.6° ; November 1st, 10 P.M., 102° ; 2d, 100.6° to 100.2° .

It soon became apparent that the fever was decidedly intermittent in its character, and the evening visits were made late for the purpose of giving a pill of 3ij quinine each evening. Four or five such doses were administered, when the temperature finally remained at the normal point. The horse was then placed on four-grain doses of arsenious acid, twice daily, and made a good recovery. Toward the last, the intermission took the double quartan form, the same as the preceding

case, although at first no regularity of the exacerbations could be observed. The cough throughout was of a dry, choky character, with no expectoration, and gradually subsided. It was probably reflex from the liver disturbance.

The membranes were never very much affected, but became slightly jaundiced toward the end of the courses.

The following two cases, suspicious of malarial origin, were lately observed. On the 26th of last December one of two well-bred, three-years old trotting colts belonging to Mr. Martin, of Quincy, suddenly went "off his feed," and began acting very dumpish. The following day No. 2 became affected the same way, and the writer was then called in.

Found both colts very dull and stupid, heads hanging, and ears lopped, and the eyes, or one eye at a time, half closed,—a position, by the way, that Dr. Griffin describes and assigns to headache, in which opinion the writer concurs.

The temperature of No. 2 was 104.5° ; that of No. 1, 102° , and the groom pronounced him brighter than on the previous day. Each colt received 3 ij of quinine, in pill form, and was given digitalis, quinine and cinchonida four times daily. In the evening the temperature of No. 2 was down to 102.4° , and that of No. 1 had not changed. The next morning, (28th), the temperature of No. 2 was 100.4° , and remained down all day, while that of No. 1 had risen nearly to 104° , and then receded to 103.2° by evening. On account of this rise in temperature, I gave each another 3 ij pill of quinine, this time in the evening.

The next morning, (29th), the temperature of No. 1 was down to 100.6° , and stayed down, while that of No. 2 rose to 101.2° , and then receded.

That evening they received another quinine pill, and the cinchonidia and digitalis continued, four times daily. On the seventh day they were put on three grain doses of arsenic twice daily for four days in the week, and seemed to recover completely.

In casting about for an explanation of these cases of intermittent fever, the fact presented itself that they were both deeply bedded from day to day with coarse prairie hay, cut

for that purpose in the river bottoms on the Missouri side, where the river annually overflows. The people in this district suffer extremely from malaria, and it is not unknown in human practice to have cases of malaria assignable to the housing of potted plants that have been transplanted from a miasmatic soil.

The position may be untenable, but nevertheless I believe these two cases to have been malarial in their origin, and to have been induced by the constant presence of the poisonous miasm brought in by the bottom-grass, and perhaps finding further means of development in the moisture of the voidings. Under this conviction, I had the stalls thoroughly cleaned out and fumigated with chlorine, thus including bedding that was stored away overhead, and there has been no recurrence of the trouble.

The principal symptoms which these cases have in common, are about as follows: A more or less severe rigor; followed by fever, loss of appetite, and very evident headache; disordered action of the liver, as evinced by yellowed mucous membranes; the temperature running to 105° and 106° F., and dropping rapidly to near the normal, only to return to its former height; and the absence of any definite signs of inflammatory trouble to account for the high temperature.

It might be objected to this diagnosis that these appearances are those of influenza or catarrhal fever. I would answer that influenza is a continuous fever, and thus it differs from this, as "la grippe" differs from malaria in human practice. But the therapeutic proof of its relationship to human malaria seems to me the strongest fact concerning it.

While *veratrum viridi*, *digitalis*, and acetanilid control the height of the fever to some extent, or temporarily, and regulate the pulse with a greater or less degree of certainty, nothing seems to put such a quietus on to the returning paroxysms as quinine. And it must be given in rather large doses— 3ij to 3iv . to be effectual, or in rapidly repeated doses, so as to obtain the accumulated action of the doses. I believe a physic in almost all cases would prove beneficial in unloading the portal system and increasing the absorption of

the quinine. I am in favor of anticipating the paroxysms, by giving the doses not more than twelve hours before the rise of temperature is expected, as is done in human practice.

In representing these cases, with the diagnosis as herein made, the writer does not assume the authoritative position, but hopes, through the medium of the REVIEW, to bring out something pertinent from other observers, that discussion of this subject may find its place in veterinary literature.

PELVIC ABSCESS.

BY DR. ROBERT J. WALKER, Chicago, Ill.

(A Paper read before the Illinois State Veterinary Medical Association.)

By request of the President of this Association I herewith present to you a written account of a case treated by me.

On December 17th, 1890, at 2 P.M., a gray gelding, six years old, weighing about 1400 pounds, was brought by owner to the hospital. The horse showed signs of abdominal pain and very much bloated; pulse 56. Was informed by owner that he first noticed horse pawing and rolling in stall Saturday December 13th, at 9 P.M. The horse had not passed any fæces since the night he was first noticed sick, and no veterinary surgeon had been called to see him. He would not eat, but owner gave him drinks of oatmeal and water. He had urinated very often, small quantities at a time.

On the morning of the 17th owner noticed the horse was a little bloated and at noon he thought he was getting larger and concluded to bring him to me. I told him, after examining the horse, that I thought he was a bad case, but I would tap him at once and relieve him of the gases. Shortly after puncturing with trocar and relieving the horse of the gases formed in the large intestines, he looked very thin and was very weak. I placed him in a large box stall and gave him a stimulant.

3 P.M. Horse standing quiet; pulse 48. Gave him aloes ball. Shortly after the horse rolled a little but did not seem to be in much pain.

6 P.M. Horse standing up but was continually pressing as if desiring to pass fæces. I made examination per rectum but was surprised to find I could insert my hand only a few inches, on account of the obstruction on the right of wall of rectum. I considered obstruction to be the cœcum which had been displaced and forced into pelvic cavity. On examination I was certain that I could place my hand on point of cœcum. I tried to press obstruction forward and into normal position, but the horse pressed so much that I considered it useless to continue. So I decided to use trocar, puncturing through wall of rectum. But before I did so concluded to call in another veterinary surgeon for consultation, and I called Dr. S. S. Baker, who arrived at the hospital at 9 P.M. I explained all I could to the doctor about the case and informed him I thought of using trocar per rectum to relieve gases and reduce what I considered the displaced cœcum so that it might be possible to then press it forward, or that it might when reduced in size get into normal position. Dr. Baker examined the horse, and found pulse scarcely perceptible, and animal very weak and staggering when moved. Dr. Baker could not be induced to think that we had a presentation of cœcum, but was satisfied that the horse could not live very long, and to use trocar, as I had suggested, could not do any harm, and it might be of benefit to us at some future time. It was with difficulty that I punctured the obstruction with the trocar, as horse was pressing continually. Immediately trocar was withdrawn from canula there was a dark, fetid discharge, which filled a large stable pail three-quarters full. Without any warning, horse evacuated a large quantity of fæces and canula at same time. At the suggestion of Dr. Baker, I made examination per rectum; found obstruction much smaller, but when I attempted to press obstruction forward it seemed to cause horse to press. The animal being so weak, I concluded to let him rest for some time. 8:30 P.M. gave stimulant, with a little linseed meal and water to drink. On examination per rectum obstruction could be felt, but introduction of hand caused animal to press, so I injected into rectum half pint of raw linseed oil. 9:45 P.M. Evacua-

tion of bowels with oil. 11:30 P.M. Horse standing quiet, pulse 48.

Friday, 18th, 6 P.M. Horse had passed quantity of fæces during night, moving around box stall, had no pain, pulse 40; gave drink of linseed meal and water and a bran mash. 9 A.M. Horse got away with bran mash and getting stronger. Made examination per rectum but could not feel anything of the obstruction. 1 P.M. Fæces passed regularly and soft. 6 P.M. Fæces very soft; gave two quarts of oats and bran slightly damp and put a little hay within his reach. 10 P.M. Fæces very soft; eating hay.

Saturday, 19th, 9 A.M. Was informed that horse got away with three quarts of oats given to him at 6:30 A.M. Bowels regular, not so soft as previous night. 1 P.M. Horse moving around box stall and had three quarts of oats for noon meal. 4 P.M. Moving around stall as if in pain, lying and standing at intervals. 6 P.M. No fæces passed since 10 A.M., and horse straining as if anxious to pass fæces. Urinating very often in small quantities, and slightly bloated.

Examination per rectum found obstruction just as large as on night of 17th inst. Gave injection of hot water. I concluded to use trocar as before, but was called out, and returned at 11 P.M., and found horse still pressing and no fæces passed. Pulse 60 and horse very weak. I punctured through wall of rectum into obstruction as before, attaching rubber hose to canula after withdrawing trocar and had fetid discharge of cream-colored matter which filled large stable pail half full. Immediately discharge stopped I had an assistant raise the abdomen, and when he did so discharge flowed until pail was nearly three-quarters full. After matter ceased to flow I injected weak solution of carbolic acid through canula. Made an examination per rectum before removing canula; could find no obstruction and canula felt as if held in position only through wall of rectum. I reached my arm into rectum as far as I could, only to find two small pellets of hard fæces. The horse was at this time very weak, pulse scarcely perceptible. I gave stimulant and injected per rectum half pint of raw linseed oil.

Sunday, 1 A.M. Horse passed fæces with clyster of oil, drank linseed oil and water, pulse 60. 7 A.M. Had three quarts of soft bran and drank water with a little linseed meal. 9 A.M. Saw horse; pulse 40, fæces regular; injected weak solution potass. permanganate per rectum. 6 30 P.M. Bowels regular; injected weak solution of potass. permanganate. Horse doing well.

Monday, 9 A.M. Pulse 40, eating hay, and fæces regular.

Tuesday, 9 A.M. Doing well, and bowels regular. 6 P.M. Owner removed horse from hospital with instructions to feed soft mashes and put handful linseed meal into all drinking water, and to report if animal's bowels were not regular.

Tuesday, February 17th. Saw animal at work. Owner informed me horse had done well ever since he had removed him from hospital, and had been at work for several days.

VETERINARY DENTISTRY.

By C. E. SAYRE, D.V.S., Professor of Dental Surgery, Chicago Veterinary College.

(A Paper read before the Illinois State Veterinary Medical Association.)

Until within the last few years no branch of veterinary science has been so much neglected as veterinary dental surgery. Recently, however, there has been a revulsion among veterinarians, and now about one-half of the cards one sees read "John Smith or Tom Jones, V.S. Dentistry a specialty."

The practice of veterinary dentistry dates back much farther than most of the profession are aware of, and I must confess that I was very much surprised on looking the matter up. The oldest work at my disposal is a translation from the French by Wm. Hope, published in 1596, and he gives the best description of the irregularities of the teeth of the horse that I found until our more recent works. I will give you a quotation from him. You will notice that the wording is very peculiar, and every disease is called a distemper. "In this distemper the grinders grow either outwards or inwards, so that when the horse feeds the points of those teeth that are

higher than the rest hurt him by pricking his flesh or tongue, and make him give over eating. This inconvenience is of no great consequence, yet it puzzles several persons when they see a horse forsake his meat without any manifest cause, and pine away when there is no apparent defect either in his eyes or his hair, and even when he is otherwise brisk and lively. You must handle his grinders, and if you feel the points of them through his lips, take a sort of upset of iron, which farriers commonly use, and setting his mouth open these points will appear, which you may break off with a googe, an instrument with which every farrier is furnished; but you must beware lest by striking heedlessly on the googe, a good tooth, or even the whole jaw, may be loosened. To prevent this inconvenience, which may easily happen, instead of using the googe, you may make the horse champ on a great file used by locksmiths, which will break off the over-grown points if they are not too big; but he must chew the file a quarter of an hour on both sides.

“I once had a mule one of whose nether grinders grew to a prodigious length. It happened that the upper tooth directly opposite to it fell out, and that below grew up into the void space, and by degrees pierced the roof of his mouth about the thickness of one's fingers, which tormented him greatly when he drunk. I have related this example as an extraordinary case to show that when once the teeth exceed their due measure and are not daily worn by chewing, they may grow to an extraordinary length, and even cut the roof of the mouth. I saw an old horse, one of whose great teeth below was a whole finger's breadth longer than the rest of his grinders. We were obliged to cast him with a great deal of trouble before we could break it off with a googe, and his jaw was so loosened by the violence of the operation that he could not eat without much pain for fifteen days after; but at length he recovered and fed heartily, which he could not do before that monstrous tooth was broken.”

This short chapter, written nearly three hundred years ago, contains all that many veterinarians of to-day know of dental surgery. From the time this work was written, I

found very little on the subject, until Percivall's able works. He only enlightens farther on caries and dentition fever, and most of his writings are taken from an essay by Prof. Gowing. Gamgee gives quite an interesting chapter on diseases of the teeth and sinuses. Later, Prof. Varnel wrote a series of interesting articles. Prof. Williams devotes several pages to diseases of the teeth. The only work devoted exclusively to veterinary dental surgery is the one written by Dr. T. D. Hinebauch.

There was very little improvement in instruments or mechanical skill in operating from the time of Wm. Hope until a few years ago, when C. D. House discovered the manner of operating in the horse's mouth without the aid of a speculum; he also invented several useful instruments. Although Mr. House was an unqualified man, he deserves the respect of the profession, for he certainly taught us a great deal about operative work. With his discovery followed many evils. He immediately started out as a professional veterinary dentist, and made a grand success; and this tempted many poorly qualified men to follow his example, who did more harm than good to the poor brutes subjected to their treatment, until the veterinary dentist came to be looked upon as a veritable charlatan. There are a few exceptions, however; men who, though non-graduates, are really expert operators, much better than many of our qualified men.

The country being flooded, as it is, by so many self-styled veterinary dentists, has accomplished one thing for which I am thankful. It started the public mind to thinking that our dumb brutes suffered with their teeth as well as ourselves. Some of you may question the assertion I have just made, but those of you who are in a country practice will agree with me; for after one of these itinerant dentists has visited your towns, you have done twice as much dental work as before.

I am glad that now the profession are giving more attention to this sadly neglected branch of veterinary science, and that now the veterinary surgeons, or at least a great many of them, can do their dental work in a scientific manner without

torturing the noble animal with a speculum. We do not want veterinary dentists any more than we want veterinary oculists or veterinary gynæcologists. We want *veterinarians* in the broadest sense of the word; men educated in all branches of veterinary science. At one time I thought we needed veterinary dentists as well as human dentists, but the field of usefulness is too limited.

Many operations can be performed on the human subject that would be impracticable in veterinary practice. Filling is sometimes successful, but has to be done early, before the pulp has been irritated or exposed; and it can only be done in the incisors and first three molars. We cannot devitalize the pulp and fill the root as the human dentist can; neither can we diagnose an acute attack of pulpitis, and save the tooth. We can recognize that the horse is suffering intensely, and the jaw the suffering is in, but until the pulp has died, and caused an alveolar abscess, we can very rarely tell which tooth it is that is causing the trouble.

Comparatively few of our horses pass through life without suffering more or less with their teeth. The most common trouble is sharp edges or irregularities on the molars. Caries is also quite common. These are conditions with which you are all very familiar; but before closing this paper I wish to call your attention to a disease of horses' teeth, which, though quite common, is often overlooked. I refer to pericementitis, or inflammation of the peridental membrane. Before describing the disease I will refresh your memory by a description of the peridental membrane. The peridental membrane comprises that tissue which fills up the intervening space between the tooth and the alveolus. It is composed of loose connective tissue, the fibres stretching across from the tooth to the alveolus in different directions, forming meshes, which are quite large, and allow a large amount of serous effusion, which raises the tooth up when engorged. It has a very large blood supply, principally from the dental artery, which passes through the jaw and sends a branch to each fang of the tooth. This breaks up into several branches, some entering the apical foramen to supply the pulp, and others passing up the sides

of the fang to supply the peridental membrane, and anastomose with the arteries of the gum. It also has a large nerve supply from the fifth nerve, and is the organ of touch of the teeth.

Pericementitis occurs in two forms, acute and chronic; either of these may be local or general; local, when one or several teeth are involved, and general when all of the teeth in one or both arches are involved in the inflammation. There are a number of local causes of pericementitis, the most common of which is putrescent pulp, due to caries or fractures of the teeth; the pulp dies and decomposes. The gases escape through the apical foramen and cause pericementitis, and when it is due to this cause it is nearly always followed by an alveolar abscess. But the cause I wish particularly to draw your attention to is irregularities of the molars in the arch, setting either in or out. This allows food to collect between them, which decomposes, and causes inflammation of the gums, which extends to the peridental membrane, and usually assumes a chronic form, resulting in an exostosis on the fang of the tooth. This nearly always occurs in the lower jaw, and is usually the fifth lower molar on both sides. General pericementitis in our subjects is nearly always due to drugs which cause salivation. Osteoporosis is also a cause of general pericementitis.

SYMPTOMS.—Those common to any disease of the mouth, salivation, quidding of the food, apparent loss of appetite, but usually the horse wants to eat but cannot on account of the pain caused by mastication. On examining the mouth, if it is due to pericementitis, you will find the gum receding from the tooth, and often the tooth is loose. Frequently the disease has gone so far that pus has formed, and you have an alveolar abscess discharging around the tooth, or it may burrow through into the sinuses.

PATHOLOGY.—First, congestion of the blood vessels; this is followed by effusion of same into the membrane, which may be absorbed, and the tooth recover, or it may become organized and undergo calcification and form new cement, or it may go through all the stages of inflammation and form pus,

which will find its way to the surface in some of the ways described.

TREATMENT.—The treatment I have found successful is tr. aconite and tr. iodine aa, p. æq., applied to the gum, and the application of a blister on the side of the face over the affected fang.

Gentlemen, if this paper will bring out the discussion that the subject merits, it will accomplish the object for which it was written.

USE OF CANNABIS INDICA IN COLIC.

BY S. STEWART, M.D., D.V.M., Council Bluffs, Ia.

(A Paper read before the Nebraska Veterinary Medical Association.)

This drug is found in the shops, in the form of coarse powder, tincture, fluid extract and solid extract. It has long been used by human physicians for the relief of spasm and pain. It finds an occasional mention in veterinary literature. Finlay Dunn says little concerning it; classes it as narcotic, anodyne, and anti-spasmodic; and claims that it has no influence over normal respiration, circulation or temperature. He quotes Sir Robert Christianson as stating that "he has long been convinced that for energy, certainty and convenience, Indian hemp is the next anodyne, hypnotic and anti-spasmodic to opium, and often equals it."

Doctor H. C. Wood once took a large dose of the infusion of hemp and knows from his experience that it obtunds the motor nerves as well as the sensory, and produces a peculiar disturbance of intellection, distorting both the sense of distance and duration.

Negative reports concerning the action of this drug have frequently been made because inert products have been supplied to the profession, but manufacturing pharmacists now produce more trustworthy preparations.

The fluid extract is the most reliable form of the drug and is a very convenient form to administer. Experience has taught me that the mucous membrane of the mouth is an ex-

cellent absorbing organ and more trustworthy than the stomach, and I give this drug in one or two fluid drachm doses, undiluted, by pouring it on the tongue from a small bottle or by injecting it into the mouth with a syringe. Oftentimes a single dose is sufficient; if not, it should be repeated in fifteen or twenty minutes, or more, and as often as the exigencies of the case require. I have given sufficient of the drug to produce hallucinations, yet no unpleasant after-effects were noticed. It is a safe drug to leave in the hands of attendants for administration.

I have used this drug in about fifty cases and it has not failed to do what I expected it to do, namely, relieve spasms and abdominal pain. I have discarded opium and chloral hydrate in this class of cases, and do not expect to resort to them so long as this agent serves me so faithfully. In simple spasmodic colic no other medicine is needed. There are many cases of spasmodic colic which recover without treatment, and many cases which seem to yield to any plan of treatment which would probably have recovered spontaneously if not interfered with, yet many cases do not recover even when drugs and manipulations are resorted to. When given charge of a case of spasmodic colic, the veterinarian cannot foretell the results, and seldom depends upon unaided nature to effect a cure. I give these cases *cannabis indica*; they recover.

In cases of acute indigestion, *cannabis indica* will relieve the pain, while other medicaments correct the digestive disturbance. The same thing is true in obstruction or impaction of the colon.

A fine roadster, four years old, which was running in pasture daytimes and was stabled nights, during the fall of 1890, contracted spasmodic colic one stormy night and was turned into an enclosed wagon room while a surgeon could be summoned. Upon arrival at the farmer's barn, some four miles from town, I found the colt rolling and tumbling violently; the hair and cuticle had been abraded from prominent portions of his face, giving the horse a dilapidated appearance; the paroxysms of pain recurred at short intervals.

The temperature of rectum was normal; the attack had not been preceded by diarrhoea or scouring; the abdomen was not tympanitic. Two-drachm doses of fluid extract cannabis indica were given every fifteen minutes for an hour, at which time decided relief was obtained; one-half hour later, the horse was dozing from narcosis produced by this drug. The attendant was instructed to give two-drachm doses of the drug every two hours during the remainder of the day. When the case was visited the next morning, the attendant reported that the pain had not returned but that the colt had stood very quietly and apparently had slept most of the time. Urine was passed easily and abundantly; no fæces were discharged; no food was taken. Found pulse 50, respiration 16, temperature 102°. Instructed attendant to give the drug in the same dose every four hours until further notice. On the morning of the second day, I found the temperature normal, respiration 12, pulse 44. Staling had been profuse and a small quantity of fæcal matter had been discharged; the appetite was good. Convalescence was rapid without further medication.

A 1200 pound work horse used for hauling dirt was brought to my hospital at 5 P.M.; he had eaten the noon ration as usual and shown no signs of illness until about 4 P.M. The horse gave evidence of spasmodic pain in the intestinal tract and was slightly tympanitic. Thinking this case depended upon intestinal indigestion, I gave one ounce of turpentine with one quart of linseed oil, followed by four or five two-drachm doses of cannabis indica. The last drug subdued the pain and the oils cleared away the irritating ingesta. The next morning this horse called for food and required no further medication. I have given this drug in the same manner to cows suffering colicky pains with just as gratifying results.

The details of many cases could be given if I thought they would interest you, but I refrain from so doing knowing that a trial of the drug will do more to convince you than all the cases I could describe. I would have you to understand that I do not recommend cannabis indica as a panacea for all cases

of colic, or that it is to be depended upon to the exclusion of all other medicaments; but I do say that I have found it a certain agent for the relief of pain attendant upon bowel disturbances; that it does not produce delirium and constipation like opiates; that it does not blister the mouth like chloral; that it is always ready and easy of administration and a safe drug to leave for attendants to administer.

ANTISEPTIC SURGERY.

BY DR. ROLAND LORD, Lincoln, Nebraska.

(A Paper read before the Nebraska Veterinary Medical Association).

It is my privilege to read a short essay before you to-day, and I must ask your indulgence, not only for the crude manner in which I have attempted to present some invaluable facts, but also, because I am unable to do full justice to the magnitude of my subject.

It is only experts who can discuss with profit the various modifications of the Listerian principles; I will give you a few facts. My subject is Antiseptic Surgery; a subject which is not only a vital one for us as advanced, and I hope, nay, I believe *advancing* veterinary surgeons, but for the whole of mankind. Medical statistics tell us that this method of surgery has been productive of as much good as chloroform and the several anæsthetics, and the annals of medical surgery are crowded with the most brilliant results achieved by this method. I cannot attempt a lengthy explanation of the principles of antiseptic surgery, and I presume it would be unnecessary, but I will give you some facts and you may deduce principles. Science will not be benefited much by what I have to say, but if it makes you think and then act, my object has been attained. Many medical authorities are opposed to the new and scientific way of treating wounds; but, gentlemen, they are of three classes; 1st, either they have never tried the method; second or having tried, did it bunglingly, and consequently failed; or third, they are of that unfortunate class of people, also too common, who know everything, and

amid that knowledge they *know* that antiseptic surgery is all bosh. How they know matters little; they know it just as well as some of our clients know, when a horse has the colic, that "there's something wrong with his water."

Perhaps to fully comprehend our modern wound treatment, one must have a knowledge of the life histories of microganisms, although a simple knowledge of the fact that microbes are like tramps, on the lookout for free board and lodging, would put anyone on their guard. When a large wound is exposed to the air the microbes rejoice, and commence enjoying a delicious lunch of plastic lymph. There is new life enough in the wound, too much, and what does Dame Nature do to get rid of these pests? She causes supuration, but if there should be pyæmic and septicæmic spores about, they prove too much for her, and produce their destructive constitutional changes. Why has carbolic acid become so famous? We have been told time and time again that it will keep a wound clean; so will water, but not surgically clean. It is simply the power of carbolic acid as an antiseptic, in other words, it destroys the germs and allows nature to heal the wound. Bichloride of mercury has proved a better antiseptic than carbolic acid, in some hands, iodoform still better in others, and thus many disputes have arisen as to the best antiseptic. But generally it matters little what antiseptic is used, so long as sterilization is complete and the germs of disease are prevented not only from gaining admission, but prevented from increasing even if admitted. This method is not a system of applying healing salves, ointments, liniments, etc., etc.; it is simply a protection of a wound from poisonous intruders. There is no such thing as healthy pus. How can a pathological product be healthy? It is absurd. An objection is often made to the minuteness of the details in our method; it is the attention to these details which go to make up the complete whole. In making a good watch, every particular screw and jewel must be carefully and accurately placed, and the result of this care is the production of a perfect time-piece. Remember this, gentlemen, that many practitioners fail to achieve good results with antiseptic surgery,

and why? Simply because they have not done antiseptic work. The method is right, but it is not properly used. You may have the most perfect and complete rifle, and yet be unable to hit the target. I ask in all fairness, can you blame the rifle? There is an infinite variety of apparatus used in hospital work which can not be applied to our patients, and I will content myself by giving a description of the various articles and apparatus which I have used and seen used, with "perfect success." Once more, before proceeding to the description of these things, let me emphatically reiterate, that it is the mode of application of these agents, and not the agents *alone*, which ensures success.

The following articles are generally necessary: irrigator, or four-quart fountain syringe, with a long rubber tube; table, or box for knives, etc., etc., etc.; dish for catgut, instruments, needles, etc., etc., etc.; lister protective; iodoform; bottle of catgut; silk-worm gut in bottle; wash-bowl for rinsing sponges; bowl for hands; razor and brush; bottle of antiseptic tablets; carbolic acid; sponges—bichloride; gauze—bichloride; cotton—bichloride; bandages; towels; plaster of-paris bandages.

Now what have we to recognize when called upon to treat a wound? Three things; the first is injured tissue, which nature will repair to a greater or less extent; second, effused fluids, which will conduct repair; third, parasites, which live on those healing fluids. Well, first remove *all* obstacles to repair. They are mechanical, as when lint, salve, powder, dirt, straw, fragments of bone, are in contact with raw surfaces, or when loss of tissue prevents adaptation of parts; chemical, the presence and growth of microbes.

Now I will suppose you have been called upon to treat a bad barb-wire cut on the forearm, great laceration of parts and some loss of tissue. Proceed as follows: have the wound thoroughly washed by a man; procure a table or box; fill your dish with 30 per cent solution of carbolic acid, and put in some oiled-silk and catgut, two pair of scissors, (one large pair to cut dressings with, and the other for surgical purposes), a scalpel, three or four needles, needle holder, forceps, (simple

and artery); fill a pail with 1-4,000 sol. bichlor.; a basin with the same; fill the irrigator and hang in a suitable place; lay out the iodoform, catgut, etc., etc.; wring out a towel in the bichlor. solution; lay it on the table; scrub your hands and arms at the same time; cut off a suitable piece of gauze; also cotton, and along with two bandages place all on the towel, and roll up ready for use—shoot anyone who touches them. Next decide whether or not to throw the animal, and act accordingly. Clip the hair from the edges of the wound, lather and then shave thoroughly for about one inch around the wound. Direct your attendant to spray frequently. Be sure to have plenty of the bichlor. solution on hand and use freely; pick out with your forceps every particle of straw, hay, etc., etc., cut away all pieces of useless tissue, but be as conservative as possible. If your hands touch any object not impregnated with bichlor, wash them in the pail. Take a sponge and thoroughly cleanse the wound, having the spray going all the time. If a sponge falls on the ground, do not use it again unless thoroughly rinsed in the pail and the basin.

Whenever you are not using the instruments lay them in the carbolic solution. Now thread a needle with suitable catgut, and commence adaptation of parts, but not until the bleeding has entirely ceased. Lay the strands of swollen catgut in the wound to its depth, and take deep stitches, but do not tie until hemorrhage has ceased; if the tissues are wide apart, *aim* them at each other; good results frequently follow. Remember to keep the spray going; don't forget yourself and take hold of the tube, or if you do, wash your hands again in the bichlor. solution before touching the wound. I will suppose the wound is closed, your catgut drainage in position: powder the line of sutures with iodoform, and if there is much loss of tissue, dust it into the recesses of the wound. Now take your strips of protective oiled-silk, first cutting a hole in it to allow the drainage catgut to be pulled through, and lay it over the wound; open your towel, muss up the gauze, lay it lightly on the wound, then cotton and bandage lightly, but firmly. In order to keep the dressing in position, put on a plaster-of-paris bandage,

commencing just above the knee ; tie a piece of rope through the bandages, and tie it around the neck, in order to help support the dressing. Feed the animal on soft food and keep him standing for a week or more.

There are three indications for removing the dressing, as follows: first, when secondary hemorrhage takes place; second, when the operation has not been done antiseptically, and third, when your curiosity becomes unendurable. In all these cases, the second dressing must be as minutely performed as the first. If, on the second day after the operation, the temperature reaches 104° , and stays there for a few hours, it would be well to remove the dressing and examine the wound, and if much inflammation be present, open treatment would be called for. The third cause is the most frequent, and it is almost impossible when first commencing this treatment, to let the dressing alone ; it requires considerable *moral courage*, therefore this word of caution upon removing the dressing. At the end of three weeks, if the operation has been antiseptically performed, you will find that the gauze will be moist and discolored, about two tablespoonfuls of transparent gelatinous discharge will be found adhering to the silk, and the dressing will smell as sweet as new mown hay ; no trace of catgut will be found, and the wound a picture of joy.

One last word, gentlemen, and I have done : If you carry out this system of surgery you will achieve some glorious results ; you will think after many successes that all these details are not necessary, you will perhaps be careless, and failures will result.. Don't forget that all the results you obtain, whether successful or otherwise, depend entirely upon the care and attention given to details.

A CALL TO DUTY.

BY M. BUNKER, D.V.S.

(A Paper read before the Massachusetts Veterinary Society.)

A number of years ago, when the study of veterinary science was in its very infancy in this country, in fact, I might almost say before it was born, a number of practitioners of this

State, of New York and of Pennsylvania, realizing that in co-operation and union there is strength, banded together and formed a society which is in existence to-day, known as the United States Veterinary Medical Association. To this Society the members were very loyal and its meetings were regularly attended, being generally held alternately in Boston and New York.

Its members comprised graduates and non-graduates. Among the latter were many men whom any school might well be proud to claim as alumni—workers and students they were without a doubt, as can be testified to by many of our own members.

There seems to have been one purpose which from the outset pervaded these men, and for the accomplishment and advancement of which they seem ever to have worked with an enthusiasm and interest which knew no such word as fail; they kept ever at work, their motto the advancement of the profession. To these men, many of whom have laid down their scalpel for the last time and gone to their reward, the young members of the profession owe a debt of gratitude and appreciation, for it is to such men as these that we find that opening and chance for the veterinary profession which is only of recent date. To this parent society the young men, as they took up their chosen profession, attached themselves, until at least it became a society with members all over the Union. Its influence has been good, its standing high, but it has not received the recognition which it should have received from the public.

As the years have passed since its inception, schools and colleges have been established, and have borne their fruit, until the graduate practitioner is abroad in the land.

Recognizing the fact that it is well for brothers to live together in peace and harmony, the graduate members of the profession in Massachusetts were invited to meet and form a State society. To this invitation there was a generous response, and as a result of that gathering the Massachusetts Veterinary Association was formed—its object, the advancement of the profession and the best interest of its members.

Its mission is a noble one, and one to which every member should be loyal in heart, faithful in service, and honest in service. There is for the veterinarian of to-day a field full of opportunities, full of chances for distinction, and last, but not least, a remuneration for his time, perhaps not always a princely sum, but yet one which will at least keep the wolf from the door. There may not always be stirring times for the investigator or specialist, but as "the still sow drinks the swill," so will the quiet but earnest worker earn the laurels when the time for action comes.

A little more than thirty years ago, a Massachusetts practitioner prior to sailing from England for home, purchased one or more text books to read and study during the voyage. One of these books had some wood engravings of the pathological appearances of various diseases, which were studied with much interest. Upon his arrival home, his practice was again taken up and the books for the time laid one side. He had not been many months at home before he was called to see a new form of disease which had broken out among our herds. On visiting the herd, a diagnosis, different from his most intimate friend's; was made, and which was disbelieved both by the veterinary profession and the human school, to say nothing of comments and criticism by the press and laity, in 1859, before the Legislature. In spite of all these sources of opposition and lack of support in his opinion, Dr. Thayer kept steadily at work until he had convinced the people of Massachusetts that they had indeed in their herds that scourge of the bovine race, contagious pleura pneumonia. Firm in his opinion, persistent and untiring in his work, he finally received from his brother practitioners support and co-operation. Then the human school and laity came over, and with them the legislative machine, and then the work of stamping out went on until there was not a case within the borders of the State. And all this had been done at a cost of about \$65,000.

I have mentioned this case thus fully for no purpose of eulogium upon Dr. Thayer, for he needs none, his work stands ever in view of such, but simply as an example to present to this Society, to show them that whenever there comes a time

for similar earnest work there will be given to them that support and co-operation which is requisite for the completion of the work.

This Society has among its members many who are capable of just such work, and it should be the mission and the object of each and every member to aid in the prosecution of such efforts.

This Society was not founded with the idea of simply having a sort of monthly retreat where we can get together, swap cases, chat a while, and swap stories.

Its only efforts should be for the best interests of the profession, strike whom it may ; it may strike you to-day, it may strike me to-morrow ; but as time is the great leveller, so, in time, will the seeming hardships be evened up.

Truth, it is said, should not always be spoken. "Honesty is the best policy." It does not always seem to be, from a financial standpoint, for the time being, the best move, but step right ahead, and the satisfaction of knowing that your cause was right, and that at no future time can your course be laid bare and proclaimed dishonest, should be far more satisfactory than the few paltry dollars.

Harmony is a great thing, but there is a time when it is to be put aside and the opposite condition come in its stead.

This Society should lead all efforts to advance the course of veterinary medicine or the interests of the profession in this State ; its voice should be heard with no uncertain sound when questions of health bearing upon our province are brought up, or are forced into prominence.

Now should always be the accepted time, no matter if it does strike in your neighborhood, perhaps disarrange some interest for whom you render service, temporarily. How much better to be able to say, "Yes, it did exist, but we got right to work and wiped it out," than to deny its existence or to claim that those who dare to come out are wild or crazy.

This Society must do its work, must do it more earnestly, and to do it thus our members must be aroused ; and now, as our annual meeting is upon us, let us all go to work and have a grand rally from one end of the State to the other.

LYMPHATICS.

By DR. B. F. KING, Little Silver, N. J.

(A Paper read before the Veterinary Medical Association of New Jersey).

The lymphatics are comprised in an arrangement of vessels accompanying the venous system throughout the body, and are divided into two groups, consisting of the lymphatics proper and the lacteals. The latter are confined to the small intestines, while the former are found in all parts of the anatomy, excepting the brain, eyes, cartilages, tendons, the horns or nails, and the hair, and constitutes what is termed the absorbent system. The history of the discovery of this system of absorbent vessels dates from the vague allusions made by Hippocrates, Aristotle and others; to the description of the thoracic duct in the middle of the sixteenth century by Eustachius; and finally, to the discovery of the lacteals by Asellius, in 1622, and is more interesting in an anatomical than in a physiological point of view. Our knowledge of the anatomy of the absorbents dates from the discovery of the thoracic duct and of the lacteals, by Asellius, whose history of these vessels, as carriers of nutritive matter from the intestinal canal to the general system, was published in 1649. Pecquet discovered the receptacle for chyle, and demonstrated that the lacteals did not pass the liver, but emptied the chyle into the thoracic duct, by which it was finally conveyed to the venous system, in 1651.

The history of the absorbents was more fully completed by Rudbeck, who discovered a system of vessels carrying a colorless fluid through all parts of the body, and also demonstrated their identity with the lacteals. They were afterward studied carefully by Bartholinus, who gave them the name of lymphatics. The old idea, which dates from the discovery by Asellus and Pecquet, that the lacteals absorb all the products of digestion, was overthrown by Magendie and others, who experimented upon vascular absorption (one of the most difficult problems in anatomy) in order to determine the situation and origin of the lymphatics in different parts of the sys-

tem. The tenuity of the walls of these vessels, even in their course, and the presence of innumerable valves, renders it impossible to study them by the ordinary methods of injection. Yet it has been ascertained and positively proved by the injection of a solution (generally of mercury), gently diffused into the vessel of origin and following the vessels as the fluid follows their course, into the larger trunks, and thence to the lymphatic glands, and the regularity with which the minute vessels carry their burden through to the larger vessels the glands, proved that the lymphatics have been penetrated, and that the appearances observed are not the result of mere infiltration. The mode of origin of the finest vessels in the lymphatic radicles is exceedingly obscure, notwithstanding the numerous investigations which have been made within the last few years, particularly by the German anatomists. In fact, the lymphatics have not been actually injected and demonstrated in all the tissues of the body; yet because we have not been able to inject them we are not justified in assuming positively that they do not exist, for example, in the intestinal villi. According to Sappey, they have never been seen, although we have no doubt of their existence.

In the elaborate observations made by Dr. Belaiff, of St. Petersburg, speaking of the origin of the lymphatics of the penis, the walls of the vessels were made apparent by the action of nitrate of silver in solution in pure water, and it is probable that they were very little distended, for the smallest of these vessels had a diameter of about one three-hundredths of an inch.

Robins and his associates have seen found a curious system of vessels which inhabit the brain and spinal cord, entirely surrounding the capillary blood vessels, and connected with the lymphatic trunk or reservoir, described by Fohman, under the pia mater. These capillary vessels float in a fluid contained in cylindrical sheaths, which exceed them in diameter by from one twelve-hundredth to one four-hundredth of an inch, the investing vessels following the blood vessels in their ramifications and containing a clear fluid with bodies resembling the lymph corpuscles. When Robins first described

these vessels minutely, he did not state definitely their physiological relations, but he has since published a memoir in which he has described them as true lymphatic vessels, analogous to the lymphatics which partly surround the small vessels in fishes, reptiles, etc. In these animals the lymphatics in many parts nearly surround the blood vessels, to the walls of which the edges of their proper coat are adherent, and that portion of the wall of the blood vessels which is thus enclosed forms at the same time the walls of the lymphatics. This disposition of the lymphatics of the brain and spinal cord, as found by Robins, would allow of free interchange by endosmosis of the liquid portions of the blood and lymph.

The lymphatic glands are arranged in groups in different parts of the body, are oval in form and of a pinkish color, and vary in size, ranging from that of a pea to that of a walnut. Each gland is covered by a capsule, which by numerous prolongations forms a reticular framework. In the interior of the gland, as the lymphatic vessel enters it, the external coating becomes continuous with the capsule. They then divide into numerous minute branches, which after a twisting and winding course unite into two or more vessels, which, in leaving the gland, become again enveloped in their outer coat. In the interior of the glands the vessels are surrounded by granular cells and a plexus of capillary blood vessel. The lacteals derive their name from the milky appearance of the fluid which they convey. They are the mesenteric absorbents, and are supported between its layers. They take their origin from the small intestines, absorb the chyle which has been produced by digestion, and after passing through two or three absorbent glands, empty their contents into the receptacle. Chyle, as it is now known, is the fatty portions of food reduced to a very fine emulsion, and that these are the only principles that are taken up in large quantities, the facts which I have already quoted from these scientists are enough to establish.

If the abdomen of a living animal be opened during full digestion, then, and then only, will the lacteals and the thoracic duct be found distended with this fatty emulsion. These

vessels do not appear in the mesentery until the food has passed the orifice of the pancreatic duct. The observations of Sanders and Bonchardet remove all doubt as to the absorption of the product of the digestion of fatty matter by the lacteals, for these observers not only found that in dogs the proportion of fat in the chyle was increased with an increase of fat taken in their food, but that the particular kind of fat given to the dog was recognized in the chyle. We have also seen that a certain portion escapes the lacteals and is absorbed directly by the blood vessels, and it is an important question to determine at the present day whether the lacteals, in addition to their more prominent functions, are not concerned in the absorption of drinks, the albuminoids, the salines and the saccharine matter.

The functional effects of this system are very important and extremely active in the constitution at large, for we are certain that the various organs of the body are continually changing, either wholly or partially, their component parts, both for renovation and alteration, while it appears to be the office of the arteries to build up new parts and remove the waste of others, the old elements being removed by lymphatic absorption.

By this wonderful power the roots of the temporary teeth are absorbed, in order that their crowns may more easily give way; and in this manner the vascular cartilages are taken up by the absorbents to make room for the bony deposits. When the animal approaches maturity it is by the lymphatics that the dead parts are separated from the living, by sloughing and ulceration, and by their coagulated lymph and extravasated blood.

The most important of the functional offices of the lymphatics is the preservation of life under casualties. Long fasting is thus tolerated through their capability of displacing the animal oil or marrow from the bones, which, with the fat from the body, is employed to make up the want. Hibernating animals live during their torpidity by a slow absorption of adipose matter, the absorbents seeming to possess the power also of selecting the matter they take. The lacteals

employ themselves exclusively in the absorption of chyle, while the lymphatics also receive some matters and reject others. That absorption is not an act of mere capillary attraction is proved by the fact that besides the healthy and ordinate action of these vessels, they have also a morbid and inordinate action. If it were not so, their absorbent powers would ever remain unchanged, while, on the contrary, we find them continually changing. Sometimes they scarcely act at all, while again they are endowed with even too much energy. There is some difference of opinion among anatomists concerning the relative structure of the lymphatic glands, some regarding them as composed simply of a plexus of lymphatic vessels, held together by a delicate stroma of fibrous tissue, while others deny that there is any direct communication between the efferent and the affluent vessels, assuming that the vessels which penetrate the glands break up into small branches, which open into a parenchyma or gland with closed follicles, and that the fluids are collected from the gland by a second set of capillaries, connected with the efferent lymphatics. It is probable that the lymphatic and lacteal vessels have no direct connection with the blood vessels except by the two openings by which they discharge their contents into the venous system. But the absorbent system shows that they not only collect fluids from the intestinal canal during digestion, but from nearly every tissue or organ in the body, and that these fluids are received into the venous circulation.

THROMBOSIS OF THE ILIAC ARTERIES.

BY DR. J. HUILSON, Jersey City, N. J.

(A Paper read before the Veterinary Medical Association of New Jersey).

Although I have nothing new to offer in my paper on this subject, a brief review may not be uninteresting, and I hope will lead to some discussion on the part of members. If there is nothing else in it, one good thing will be its brevity, and that, I know, will commend itself to you. We very seldom read or hear of cases of thrombosis, and it would appear from

this to be a very rare disease in actual practice. I personally have but little experience, and that only while at college, with a few cases in the live animal, but in the dead subject in the dissecting-room we find it different. I think while at college that about one out of every twenty of the plugs used for that purpose exhibited thrombosis, and that too in vessels in most instances of considerable size. One case I remember in the post aorta, near its origin, but the majority of them occurring in that vessel at its termination, or involving the iliac arteries. The museum of the college also contains many interesting examples of this disease. It seems to me, therefore, from its frequency in these dead subjects, that during life the trouble must frequently remain unrecognized, or probably be the cause of many obscure lamenesses or diseases. I should like to hear the views of members present, and their experiences as to the frequency of its occurrence in practice.

I will only briefly consider the pathology of thrombosis or embolism, as it might occur in any blood vessel, and then give the symptoms as exhibited, especially when affecting the post aorta or iliac arteries.

Regarding the pathology, I extract from Williams that a thrombosis is the coagulation of the blood in the vessels, be it arteries or veins. It may proceed from inflammation of vessels, caused by some injury, the result of this being an exudation from the walls of the vessels, forming the nucleus of the clot. The formation of the coagulum always begins at some definite, fixed spot, which is the source of local irritation, and from this it extends until the artery is plugged up to its origin from the parent trunk. Portions of this clot or thrombosis may often become detached from the walls or valves of the blood-vessel, and be impelled onward to other parts of the circulation, being then termed an embolism. Thrombi may be impelled from the heart to the arteries, or may form in the veins and travel to the heart; as long as the thrombosis is confined to a branch vessel, there is no particular danger. But the greater number of trombi in the small branches do not content themselves with advancing up to the level of the main branch, but new masses of coagulum deposit themselves

in the blood, upon the end of the thrombus, layer after layer. The thrombus is prolonged beyond the mouth of the branch into the trunk, in the direction of the current of the blood, and shoots out in the form of a thick cylinder, farther and farther, becoming continually larger and larger. It is these prolonged plugs that constitute the source of real danger, as the stream of blood may detach minute portions, hurry them away with it, and wedge them tightly into the nearest system of arteries or capillaries. Thus many cases of sudden death, that would be otherwise unexplainable, are accounted for.

Now regarding the symptoms. These in thrombi of internal blood-vessels, in many cases, would be impossible to recognize during life. We may have a suspicion of the trouble, but not sufficient to give a positive diagnosis. Perhaps externally, from the decreased amount of blood supplied to the part, we may detect more or less atrophy of the muscles supplied by such vessels. Thrombosis of the iliac arteries, the vessel supplying the circulation of the posterior extremities, may very plainly be recognized, both by symptoms plain to the sight, and by examination internally. I will endeavor to present these symptoms, as shown when affecting these vessels, in speaking of thrombosis. We understand, of course, that the blood-vessel is not entirely plugged by the clot, the blood being able to trickle in most cases between the coagulum and the coat of the vessel; and, again, if both sides are affected, the symptoms would be shown in both extremities.

The history of these cases will sum up about as follows: An animal, apparently sound in every respect, when driven for a short distance, develops symptoms of lameness, a weakness or slight paralysis behind, which will increase until unable to make further progress. During this time he will break out in profuse perspiration over his body, the leg is kept in constant motion, alternately raised and lowered, in a spasmodic manner. Respiration is hurried, pulse very weak, and seems in great pain. Another marked symptom, also, is on feeling the leg below the hock we find it to be of an icy coldness. If you continue to urge him he may fall down. After resting or lying a certain length of time, he will get up, and when

brought to the stable stands and rests, and the symptoms disappear; to reappear, however, upon the same exercise. As long as he is in the stable he shows no symptoms, but when the circulation of the blood is increased by exercise, the spasm or cramp of the muscles and irritation again develop. The lameness resembles—and when first seen might easily be mistaken for—spavin, walking on the toe, as in hock lameness. The disease may also, sometimes, with hasty diagnosis, be mistaken and treated for azoturia or colic; but with such a history,—a patient showing these symptoms every time he is driven or exercised, and recovering after rest; the profuse perspiration and cold extremity—the veterinarian will be led to suspect the real trouble, and the diagnosis can now be easily confirmed by an examination per rectum. Inserting this hand into this organ, searching for these large blood-vessels which will be found situated beneath about the last lumbar vertebra, we can feel the hard or cordy vessel, and the loss of pulsation or a fluttering sensation as of a small stream passing through a narrow space; the difference between that and the healthy artery will confirm our diagnosis.

TREATMENT.—There is nothing we know of that will avail in this trouble. Perhaps a mild case might be found where attempts may be made to cause absorption of the clot, assisting, perhaps, by medicinal agents, such as iodide of potassium, mercurials, or alkalies, or turning out to pasture, trusting to nature; but I have not yet heard of any successful treatment.

REPORTS OF CASES.

TUBULAR PREGNANCY, AND GASTRO-HYSTEROTOMY.

BY W. M. SIMPSON, D.V.S., Greenfield, Mass.

The patient was a twenty-two-months-old heifer, the property of Mr. George E. Lyons, which I was called to May 17th, 1890. On seeing the animal, at once concluded she was in labor full term, and found the os and part of the uterus pro-

truding per vulva. The os was firmly contracted, but on dilating, could easily feel the sides of the uterus, which was small and virgin-like. The organ was then replaced (uterus) but no signs of a foetus discovered. The left hand was then introduced per vagina, and in feeling forwards, downwards and towards the right side, could detect the foetal movements, which also could be seen on the right flank. After taking into consideration the facts here mentioned, extra uterine foetation was diagnosed, but whether tubular or abdominal pregnancy was not distinguished until after operating, although Steele says that extra uterine foetation in the cow was generally abdominal. The question of delivery was considered and "laparotomy" "gastro-hysterotomy," or "cæsarean section," was at once decided upon, although it was deemed best to wait until the next day, as better assistance and light could be obtained. Then, with the assistance of Dr. Zabriskie, (MD.) the operation was performed, to wit: The patient was gently cast and laid on the left side, and an ounce and a half of chloral administered; feet hobbled, except the right hind foot, which was held back by an assistant; the hair closely clipped from the flank, thoroughly washed with warm water and soap, afterwards sponged with a solution of 1-1000 of bichloride. An incision was then made in front of the anterior spinous process of the ilium, down and slightly forward, until the opening, which measured fourteen inches, was considered ample. Next the abdominal muscles and peritoneum. On incising the latter membrane the large dilated portion of the fallopian tube was easily found and drawn partly through the incision.

That part of the sack which seemed the least vascular was chosen, incised, and the offspring removed, the cord ligatured and severed. The placenta was then removed and the uterus pro tem was washed out with a weak solution of carbolic acid, and care taken to remove all the fluid, which was done with a sponge. The uterine walls were brought together and sutured with silk and powdered with iodoform. The peritoneum and muscles were treated separately, similar to the tube, with a good sprinkling of iodoform on each line

of incision. (In sewing up the abdominal muscles much help can be obtained by having the right hind leg brought well forward). The skin was then sutured and the flank again washed with a solution of bichloride. The patient was then allowed to rise and a wide bandage of bichloride gauze applied, over which a cotton bandage saturated with bichloride of mercury was placed, and, contrary to Prof. Fleming, the animal was allowed to lie down, *ad libitum*. The calf, a fine heifer, was named *Cæsariena*, and was soon taught to drink milk.

May 19th. Temperature, $102\frac{1}{2}^{\circ}$; pulse, 60; appetite and rumination good; feed consisting of bran twice a day and a fair allowance of hay; calf bright and playful.

May 20th. Temperature, $102\frac{4}{5}^{\circ}$; pulse, 66; good appetite; flow of milk increasing; calf doing well.

May 21st. Temperature, 103° ; pulse, 66; bowels slightly constipated, but bright and eating well. Prescribed magnesium sulph oz., one pint water. Calf doing nicely.

May 22d. Temperature, $102\frac{1}{5}^{\circ}$; pulse, 56; eats and ruminates well. Examined the line of incision and found the skin had healed by first intention, with a slight swelling around the incision due to a slight inflammation in muscle tissue. Re-adjusted the bandages, first giving a good bathing with bichloride. Calf dead, having died during the night, from tympany.

This was a source of a great deal of regret. The only cause assigned was from the fact that it had been put to an old milk cow and the bowels did not get that purge which is generally necessary.

May 23d. Temperature, $102\frac{1}{5}^{\circ}$; pulse, 56; appetite good and giving six quarts of milk a day. Bowels moved and the patient as bright as though nothing had ever occurred to mar her happiness and from this out there was no signs of inflammation of any character. To-day she is again with calf and due in July. In the course of operating it was only necessary to ligature two small vessels, no doubt branches of the circumflex illii. And one physician said it was conspicuous for the small amount of blood. I have hunted up the

authorities in my possession and can find no account of tubular pregnancy in the cow.

A QUEER FREAK OF NATURE.

By A. E. DERWENT, D.V.S., Waverly, Ia.

A short time ago I was called to operate on what the owner called a hermaphrodite for the purpose of removing the testicles. The animal was five years old, a well bred animal from running stock.

The mammæ were well developed, having two well-formed mamilla instead of the scrotal sack, which contained two well-formed testicles, which could only be felt by manipulation.

The penis was well-developed and of natural size and was situated in the line of perinæum about five inches below the anus, the urine being voided through its natural course, there being no vulva developed. I make a report of this case, having never seen a similar report in the REVIEW.

EXTRACTS FROM FOREIGN JOURNALS.

DOES CASTRATION OF FEMALE DOMESTIC ANIMALS PREVENT THE RETURN OF RUTTING?

By MR BARTHELEMY.

Thirty-eight young sows, ranging in age from forty-five to sixty days, which had been operated on by a professional castrater, subsequently become in heat monthly in the same manner as if they had not been subjected to the operation, and a law suit resulted between the owner and the operator, the former claiming that the operation had not been skillfully performed, and the latter affirming that both of the ovaries had been removed in the case of each of the animals. By order of the Court, five of the pigs were killed, and a post-mortem examination made by two veterinarians, who reported that the ovaries, the oviducts and the greatest part of the uterine horns were absent in all the five cadavers.

The problem was thus evidently solved, and the fact established that female swine may become in heat after the re-

moval of the ovaries. The question whether this is good law for other animals remains for physiologists to amuse themselves withal.

The same author reports a case in which he performed double ovariectomy in a nymphomaniac mare, which, notwithstanding, had frequent subsequent periodical returns of heat.

LACERATIONS OF THE FIRST THREE TRACHEAL CARTILAGINOUS RINGS MISTAKEN FOR AN ATTACK OF PHARYNGO-LARYNGITIS.

By MR. BRU.

In this case a mule hitched to a cart fell down and was severely wounded in the upper part of the neck in consequence of the breaking of one of the shafts of the vehicle. The manner in which the injury occurred was only known after the fatal termination of the case became imminent, the facts not being reported until the subsequent development of the symptoms, when the patient became seriously sick. When first seen there was tumefaction of the right parotid region, and the food returned with the discharge from the nostrils and was coughed through the mouth whenever he was fed with the hay or bran mashes which constituted his fodder. The general appearance of the patient was good, and there was no disturbance either of the respiration or circulation. A local embrocation was applied to the parotid swelling, and the animal was placed under observation. Three days later there was an appearance of fluctuation in the parotid, which, upon being punctured, discharged, instead of pus, a small amount of blood mixed with a few bubbles of air, and this condition continued until the death of the animal, which occurred seven days after the injury. At the post-mortem the first ring of the trachea was found to be fractured in its entire extent, and the third and fourth cartilages were separated, the fibrous tissue which unites them having been torn by the blunt end of the shaft of the cart. The tracheal mucous membrane was slightly congested.—*Revue Veterinaire*.

NUX VOMICA AND STRYCHNIA IN THE TREATMENT OF PURPURA.

By MR. ROUDE.

This is the record of three cases of purpura successfully treated by the administration of these nervous stimulants. In the first case an animal which presented the characteristic swellings of the legs and abdomen, with petechial spots over the mucous membranes, was treated with four grammes (one drachm) of the powdered nux (given in wine), and after three days was completely relieved.

In the second, the same symptoms existed, but in a severer aspect, besides which the head was so enormously swollen as to render the prehension of food impossible. Puncture with the actual cautery were performed and nux vomica prescribed, and in a few days the animal made a good recovery.

In the third case the symptoms were still more marked, and the same form of treatment seemed to produce no effect on the patient. The head continued to swell, and the respiration was effected to an extent which seemed to threaten suffocation. To prevent this tracheotomy was resorted to, and the treatment changed to the hypodermic injection of a solution of sulphate of strychnia. This treatment, which was continued for forty hours, was followed by a rapid improvement, and though the case became complicated by local gangrenous swelling and of the sloughing of the wound of the trachea, the animal was in a short time able to resume his work.—*Ibid.*

[This form of treatment of purpura is one which is in common practice with American veterinarians, Dr. J. Hopkins, of Newark, N. J., having been one of the first to put it into use.—ED.]

SUDDEN TEARING OF THE LATERAL LIGAMENTS OF THE HIND FETLOCK JOINT.

By MR. L. MAGNIN.

A half-thoroughbred mare was found one morning in her stall, making violent efforts to rise, during which the right hind fetlock showed an abnormal movement of flexion. Succeeding at length in getting upon her feet, the hind fetlocks

were found to be affected with well marked œdematous swellings, the outside of both joints being the parts involved. When made to move, the act was performed with difficulty, the fetlocks appearing to be anchylosed, and the digital regions being turned inwards. Manipulation of the parts showed a change in the relations of the bones, the phalanges being so turned inwards as to form an angle with the cannon bone, the opening being towards the median line, the displacement of the articular surfaces being accompanied with a well-marked crepitant sound. Notwithstanding a severe blister over the outside of the joints, the patient grew worse, until, in consequence of her efforts in getting up, the skin became ulcerated and torn, until the lower extremities of the metatarsal bones protruded, and the digital region was bent more and more inwards, until it rested on the entire length of its external surface. The animal was destroyed, and at the post-mortem it was discovered that the left joint, besides the rupture of both lateral ligaments, had become the seat of extensive lesions of acute arthritis. The same conditions were present on the right side, but the lesions were less extensive. *Rec. de Med. Vet.*

[We remember another case, in an animal in which a lesion of the same nature was present, with a corresponding diagnosis, in connection with a severe lameness of the near hind leg. The animal was kept under treatment for a very long time, with a resort to slings, splints, blisters, etc., which all failed to produce any beneficial effects, the 'destruction of the animal becoming finally necessary.—ED.]

TRANSMISSION OF TUBERCULOSIS FROM MOTHER TO FŒTUS.

BY PROF. CSOKOR.

A preparation was exhibited by the author before the Medical Society of Vienna, of an anatomical and microscopic preparation, showing, without doubt, the transmission of tuberculosis from mother to fœtus. The case was that of a pregnant cow, suffering with pulmonary tuberculosis, and having well-marked pleural, pericardial and peritoneal com-

plications. The foetus, which was well developed, showed evidence of deep anemia. In the hepato-duodenal ligaments there were six lymphatic glands, largely tumefied, the section of which showed caseous and calcareous focci; and surrounding the glands, the superficial lymphatic vessels were the seat of numerous tubercles of the same nature, containing epithelioid and round giant cells, with numerous bacilli. This fact proves that the morphological elements of tubercles (epithelioid, round, and giant cells), do exist in a tuberculous mother, and that a regressive metamorphosis, (caseous and calcareous degeneration), can also take place. The infection was probably transmitted through the portal vein, as only the glands of the hepato-duodenal ligaments were affected.—*Semaine Medicale.*

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The seventh annual meeting of the Veterinary Medical Association of New Jersey was held at the State Street House, Trenton, on Thursday, April 9th, 1891.

The meeting was called to order by President Dr. J. W. Hawk, of Newark. The Secretary called the roll, and following members were present: Drs. J. W. Hawk, Newark; H. Bradshaw, Trenton; A. Brown, Winsor; S. S. Cole, Millville; J. C. Dustan, Morristown; J. Hurley, Hopewell; B. F. King, Little Silver; S. Lockwood, Woodbridge; W. H. Rowland, Newark; W. Runge, Newark; J. Huilson, Jersey City; R. O. Hasbrouck, Passaic; W. W. Curry, Jersey City; J. Gerth, Jr., Newark; T. DeClyne, New Durham; J. M. Everitt, Hacketstown; M. M. Stage, Dover; A. W. Axford, Naughtright; and W. H. Cooper, Trenton.

The minutes of the last regular meeting were read by the Secretary, and approved; also minutes of the special meeting were read and approved.

President Hawk's address was both interesting and instructive. The synopsis of address being the legislative bill and registration, absence of contagious disease in the State, there not being a case of pleuro pneumonia within its borders, trouble among horses at the present time, the work of the Bureau of Animal Industry, giving the history of the work done in New Jersey for the last nineteen months, the number killed and the cost of the same, the great work done and being done by the United States Bureau of Animal Industry, and some sound advice to the Association for its future welfare.

There being no unfinished business, Secretary Cooper read his yearly report, which was accepted and placed on minutes.

Treasurer King read his yearly report; also accepted and placed on minutes.

The Chair appointed Dr. Brown to fill vacancy in Board of Trustees. Chair declared an intermission for the Board of Censors and Trustees to make their report.

President called meeting to order.

Dr. Dustan, chairman *pro tem.*, made a report on legislative bill, also on constitution and by-laws, and advised the Association to prosecute unregistered veterinarians. It was moved report be received, which was seconded and carried.

Dr. Huilson read a paper on "Thrombosis of the Iliac Arteries;" followed by Dr. King with a paper on "Lymphatics."*

Discussion of these papers was very animated, Drs. Hawk, King, Dustan, Runge and others taking part.

Dr. E. Britton, Long Branch, N. J., was proposed for membership. Laid over according to by-laws, until next meeting.

Election of officers for the ensuing year resulted as follows: President, Dr. R. R. Letts, Hoboken; First Vice-President, Dr. J. C. Dustan, Morristown; Second Vice-President, Dr. W. Runge, Newark; Secretary, Dr. W. H. Cooper, Trenton; Treasurer, Dr. B. F. King, Little Silver.

Board of Censors: Dr. J. W. Hawk, Chairman; Dr. W. B. E. Miller, Camden; Dr. J. Huilson, Jersey City; Dr. A. Brown, Winsor; Dr. W. W. Curry, Jersey City.

Chair appointed Dr. Dustan to escort the newly elected President to the Chair; Dr. Hawk welcomed Dr. Letts to the Chair with a short address.

Dr. R. R. Letts, on taking the Chair, made a short address, in which he spoke very feelingly of the honor bestowed upon him, and thanked the members for this mark of their esteem of him—one of their youngest members—in electing him to be their President. He hoped that he would be able to leave the Chair with honor, and that others may say of him, as he now says to the one who has just vacated the highest office of this Association, "well done, good and faithful servant."

President Letts appointed Dr. Hawk to escort the other newly elected officers and introduce them to the Association, which ceremony each gentleman thus honored acknowledged in a short address.

Moved and seconded to proceed to business. Carried. After considerable business had been gone through, the Association adjourned for the banquet, which was very fine, and enjoyed by all.

After the banquet the meeting was again called to order, and John C. Pitney, of Newark, was elected the Counselor of the Association.

The President appointed the following as delegates to the different Associations: United States Veterinary Medical Association, J. C. Dustan and W. W. Curry; New York Veterinary Medical Association, T. DeClyne and A. Axford; Pennsylvania Veterinary Medical Association, J. Huilson and W. B. E. Miller; Maryland Veterinary Medical Association, W. Runge and J. Gerth, Jr.

Essayist for next meeting, Dr. W. W. Curry.

Adjourned to meet at Newark on the second Thursday in August, 1891.

W. H. COOPER,
Secretary.

MASSACHUSETTS VETERINARY ASSOCIATION.

The annual meeting of the Massachusetts Veterinary Association was held at Young's Hotel, Boston, Wednesday evening, April 22d, 1891.

Presiding officer—President Thomas Blackwood.

Minutes of last meeting read and accepted.

Annual reports of the Secretary and Treasurer read and accepted.

The Secretary was instructed to continue to subscribe for the *Veterinary Journal*.

Motion made by Dr. Saunders, and seconded by Dr. Hitchings, that the chair appoint a nominating committee to report a list of officers for the ensuing year. Carried.

The following nominating committee was then appointed: Drs. Winchester, Saunders, and Hitchings. It reported the following names: for President, L. H. Howard, D.V.S.; for Vice-President, W. H. Hitchings, D.V.S.; for Second Vice-President, W. A. Sherman, D.V.S., M.D.; for Secretary and Treasurer, Austin Peters, M.R.C.V.S.; for Executive Committee, A. Marshall,

*Both are published in this issue of the REVIEW.

M.R.C.V.S., C. E. Hadcock, M.D.V., E. C. Beckett, M.D.V., Charles Winslow, D.V.S. and George Penniman, D.V.S.

Moved by Dr. Winchester and seconded by Dr. Saunders, that the Secretary cast one ballot for the list of names reported by the nominating committee. Carried.

The Secretary then cast one ballot in the affirmative, and the above list of officers was declared duly elected.

The new President, Dr. L. H. Howard, then took the chair.

Moved by Dr. Hitchings, seconded by Dr. Saunders, that the retiring officers be given a vote of thanks for their services during the past year. Carried unanimously.

The meeting then adjourned to the annual dinner.

AUSTIN PETERS,
Secretary.

VETERINARY ITEMS.

COMPLIMENTARY DINNER TO PROF. R. S. HUIDEKOPER.

In recognition of the valuable aid and unselfish efforts for the good of the profession in Philadelphia and vicinity, rendered by Prof. R. S. Huidekoper, there was gathered together at the Colonnade Hotel, Friday evening, April 17th, the most representative body of veterinarians ever assembled in Philadelphia, to tender him a farewell dinner and a God speed in his new field of labor, the city of New York.

Around a beautifully arranged table, flanked on all sides with green plants, forty covers were laid, to each of which was attached a unique menu card and a gilded old horseshoe with name cards, a souvenir of the occasion.

The head of the table was presided over by Dr. W. Horace Hoskins, on whose left was seated Prof. R. S. Huidekoper, and with the following well known veterinarians to do him honor: Drs. Jno. W. Gadsden, Francis Bridge, Henri Formad, John Marshall, W. H. Ridge, H. B. Felton, J. C. Walker, G. R. Hartman, C. H. Magill, Jas. B. Rayner, W. S. Kooker, M. W. Drake, H. P. Eves, S. J. J. Harger, L. O. Lusson, F. H. Mackie, Rob't. Gladfelter, Geo. B. Rayner, Frank Stauden, W. B. Montgomery, W. B. Wemtz, Chas. Schaufler, Chas. E. Goentner, Thos. B. Rayner, W. B. E. Miller, Alex. Glass, Robert Formad, and Mr. Wheeler of the class of 1891, of the Veterinary Department of University of Pennsylvania. The press was represented by Mr. Wanamaker, of the *Philadel-*

phia Ledger. Letters of regret were received from Drs. Isaiah Michener, Jas. J. Ross, Jno. R. Hart, A. F. Schrieber, and Wm. A. Birch.

After a most palatable feast, including planked Delaware shad, all of which was enjoyed in pleasant conversation by this remarkably congenial gathering, the time arrived when the chairman drew the attention of the guests to the toast list. Dr. W. Horace Hoskins, responding to the toast of "Our Guest," briefly reviewed the career of Prof. Huidekoper among us, touching rapidly upon the many ways he had aided and encouraged the growth of the profession, meting to him the just recognition he so well deserved, and wishing him on behalf of the entire profession, success, health, and happiness in his new field of labor.

In response, Prof. Huidekoper thanked very warmly the members of the profession for the cordial wishes and the unexpected recognition they accorded him, and feelingly referred to the large number who honored him in their presence around the table. Touching quickly his humble efforts in our midst, he felt that he could say something to each one personally did time allow, for in some way or another they had all contributed to his work and pleasure in Philadelphia.

"The Profession" was most heartily responded to by Dr. Jno. W. Gadsden, who, tracing the wonderful strides made by veterinary science, paid a glowing tribute to the valuable part Prof. Huidekoper had contributed in the work done.

The "Pennsylvania State Veterinary Medical Association" was fittingly responded to by one of its organizers, Dr. W. S. Kooker, who, after tracing its history from infancy and the work it had accomplished, pointedly referred to the zealous, prompt, and efficient part taken by our guest. He held him aloft as a fitting example of a worthy member, that all might emulate.

The "Keystone Veterinary Medical Association," was held aloft as one of the foremost associations in the land, by Dr. Chas. T. Goentner. Leading or at the front in all movements for the general good of the profession, he said no little part of its success was due to Prof. Huidekoper, who had always shown

the keenest interest in its success, and accorded it a strong helping hand at all times.

"Our Preceptor," was very feelingly responded to by Dr. W. H. Ridge, a former student under Prof. Huidekoper. Outlining the broad course of study he had planned for them as students, and the great appreciation of the same that they felt, he closed his remarks with the sincerest wishes for him, and the keenest regret at his loss.

"Our Sanitary Friends," a toast allotted to State Veterinarian Bridge, who was imperatively called away, fittingly fell to the lot of Prof. Henri Formad, who in his jocular way referred to Prof. Huidekoper as a magnificent specimen of bacteria. Alluding to his great sacrifices of a personal and purely unselfish character for the profession, and how few such men we found, he most earnestly touched upon his work in the Veterinary Department of the University of Pennsylvania, and rendered to him the just tribute, that it would have never existed to-day had it not been for his zeal and labors. Deploring the causes that led to his departure to another field, he could not feel that we had lost him, but that through the many channels of his labors, we would still feel his work in our midst.

"Our Neighbors," was responded to by Dr. W. B. E. Miller, of New Jersey, who in the sincerest manner, voiced for his people the keen loss they felt, assured him that from no source would there follow him in his new field more sincere wishes for his success and well being than from his admiring friends in New Jersey.

"Our Daily Bread," was most fittingly assigned to Dr. Alex. Glass, who, after explaining the troubled efforts to unsuccessfully retard the progress of the fleeting dollars, said he honored Prof. Huidekoper for his success in raising the dignity of the profession to a higher standard in Philadelphia, and with it brought a better rate of compensation for professional services than had been accorded the profession before he entered it. Referring to the many personal kindnesses he had received at his hands, he assured him that only the best wishes of the entire profession would follow him.

Calling upon Dr. John Marshall, Dean of the Veterinary

Department of the University of Pennsylvania, Prof. Huidekoper was the recipient of warm words of appreciation for his work in that institution. After referring to the high standard he had established, the zealous work he had contributed for its success, he pictured the requirements for the building of a structure to be essentially brick and mortar, and in his present position as Prof. Huidekoper's successor felt that to the latter he conceded the part of representing the bricks, while he assumed that of the mortar. With a rising movement all turned to our guest, to fittingly close this pleasant occasion by drinking to his health and success a closing toast. N. N. S.

MINNESOTA VETERINARIANS ALIVE.

The failure of two bills regarding the practice of veterinary medicine and a contagious disease act, in the Legislature of the State of Minnesota two years ago, has awakened a stronger interest in these matters at the present session of the State Legislature. On December 26th, 1890, a general meeting of all veterinarians practicing in the State convened at the Astoria Hotel, St. Paul, Minnesota, and considered the outlines to be followed towards securing these or similar bills during the present session. After the reading of several bills and a lengthy debate, a committee of nine was elected, to be known as the Executive and Legislative Committee, with power to act. The following gentlemen compose the committee:

Prof. O. Schwartzkopff, Chairman, St. Anthony Park; J. Hinmann, Secretary, St. Paul; R. Price, Treasurer, St. Paul; C. C. Lyford, Minneapolis; E. Rowell, Minneapolis; Wm. Dickson, Lithfield; A. L. Button, St. Paul; C. H. Parker, Minneapolis; A. Scott, Owatonna.

The committee has been in session at several times, and has drafted a bill, which is introduced into the State Legislature with the best possible chance of success.

As soon as this bill has been passed the committee will consider the presentation of a contagious disease act, and also an act to incorporate the State Veterinary Medical Association.

CORRESPONDENCE.

SPAYING IN SMALL FEMALES.

Editor American Veterinary Review :

DEAR SIR :—I have read a paper in the REVIEW of Nov. 18th, 1890, written over the name of T. B. Rogers, D.V.S., which has caused me a good deal of anxiety to know how long and how extensively he has practiced "spaying," under the methods he mentions, for what he designates the enlightenment of the younger members of the profession.

I am a graduate and practitioner of comparative medicine, and am proud to think myself among a class of scientific men whose motto is, (or should be), amelioration in every practicable manner of the sufferings of our lower animals (and earth-born companions).

I firmly believe that scientific and consequently successful practice of veterinary medicine and surgery can come from such men alone as build their methods and practice upon a sound education and moral which has for its corner-stone, humanity.

In the reading of this article written by Mr. Rogers, I find proof added to proof, strengthening my conviction.

In the name of veterinary science and such convictions I am, I think, justified in asking Mr. Rogers to answer satisfactorily (to the junior members at least) the following questions regarding his operations :

1st. Why in the name of modern science does he not make painful and delicate operations in such animals under the influence of anæsthetics, as is being almost universally practiced by every practitioner worthy the name?

2nd. Why should sections of the uterus be removed and in several ways increase the gravity of the situation to no practical purpose if the operation of ovariectomy be skillfully performed?

3rd. Was the bladder not opened by accident rather than mistake, owing to struggling from pain, and why was the organ not relieved by the catheter previously?

4th. Why should we fear the breaking off of a resistant

body, as the uterine horn, even in a delicate patient, if the operation be scientifically performed under anæsthetics?

5th. Why should such extreme care be observed that the parietal wound be wholly within the linea alba, where it is well known fibrous tissue predominates and where healing by first intention is a result seldom gratifying the operator?

I quite agree with the writer that nothing enhances the surgeon's reputation as do skillfully performed operations, but doubtless, like many others, think the infrequency of this operation in the hands of practitioners due less, very much less, to their not being competent to skillfully perform the operation, than to good reasons (deep reasons), one of the least of which is, it is an operation which may and has been greatly abused by being indiscriminately practiced.

I fear unless our friend can and will place scientific answers opposite these questions submitted, his "star" as a scientific surgeon in this age may have set.

FRANK H. MILLER, VS.

REGULARS AND IRREGULARS.

Editor Review:

Inclosed I hand you three dollars for the renewal of my subscription to the REVIEW, which I find to be indispensable, although so many of its writers are clamoring for a law to throttle all irregular practitioners.

The great solicitude of these men for the protection of the poor, simple-minded public would be pathetic, as well as sympathetic, could we eliminate from it a vague suspicion that this solicitude is not unmixed with a faint desire for self-protection from these same irregulars, many of whom acquired their knowledge in the school of practice before the veterinary colleges had existence.

It is a terrible thing on the public for these irregulars to tend and cure their neighbors' sick animals; but we hear no denunciations of the regulars who are going about delivering street lectures and selling quack remedies, the formulas of which are kept secret.

To stop this species of writing and law making, would it

not be a good idea to lay a heavy tax upon the irregulars, and turn the proceeds into a pension fund for these regulars who can get no business and who are crying aloud for protection? I for one would gladly pay my share of the tax.

The practice of medicine may be a science, but if so, some of the most famous practitioners have not found it out. Dr. Davis, of Rush Medical College, calls it an "incomplete science." Yes, rather incomplete, as illustrated by President Garfield's case, familiar to the world.

At the time this celebrated case was before the public, a "moonshiner" in North Carolina was shot so full of holes that his hide would hardly hold ear corn. He was thrown into jail and tended by an obscure mountain surgeon. In ninety days he was well enough to stand trial and be sentenced to the penitentiary for violating the United States revenue laws.

Under the skilful manipulations of the graduates who are at the top of the medical science hill, a public man when stricken by disease is as certain to need an undertaker as light is to appear with the rising sun.

In the horse world a horse suspected of glanders is doomed to death if a regular is called in. They cure the disease by killing the victim: that is, cut off the toe to get rid of the corn, and this is "scientific medication." Mark, I say if only suspected; for the symptoms of glanders are found in so many other diseases, that the college-bred is afraid to diagnose the case, and so orders the animal's death, the grave being a good hiding-place for incompetency.

All we ask is freedom and a fair field, and a discerning public will soon give to each man his true place according to his ability.

V. G. HUNT.

A CORRECTION.

ODEBOLT, IOWA, Feb. 17th, 1891.

Editor Review:

In my article on "Corn Stalk Disease," in the February number of the REVIEW, on page 669, in second paragraph, which reads as follows: "and what a large majority . . . , and as a result have advocated and treated according to the old dry American theory," the word *American* should read *murrain*.

Would you please note the error in one of your next issues?

Inclosed is a report of two cases that I would like to present to the profession, if you deem them worthy of publication.

Very respectfully yours, G. A. JOHNSON.

AMERICAN VETERINARY REVIEW,

JULY, 1891.

EDITORIAL.

SECOND CONGRESS FOR THE STUDY OF TUBERCULOSIS.—We have been furnished with the official call of the meeting of a second congress, instituted for the study of tuberculosis. It is to be convened in Paris on the 27th of July and will continue in session until the 2d of August, under the presidency of Professor Villemin, and all physicians and veterinarians are invited to participate in the discussions. The following questions will be considered: First, the identity of human tuberculosis with that of the bovine and the ovine families and other animals. Second, the bacterian and microbial associations of tuberculosis. Third, the hospitalization of tuberculous individuals. Fourth, prophylaxy of human and animal tuberculosis. Fifth, agents which, while destructive to the bacillus of Koch, are harmless to the human organism in respect to the question of the prophylaxy and the therapeutcy of human and animal tuberculosis.

Gentlemen proposing to unite with the constituency of the congress are requested to address Mr. G. Masson, 120 Boulevard St. Germain, Paris, notifying him of their intention, and enclosing a postoffice order for twenty francs. All communications are to be directed to Dr. L. H. Petit, 11 Rue Monge. The committee of organization includes a large number of veterinarians.

Each member will be entitled to the volume containing the entire transactions of the congress; and it would seem that this second meeting, comprehending the discussion of so

many questions of leading interest by the *elite* of the profession, and twice gone over, can hardly fail to be followed by results of great interest and value to the cause of medical science at large, and that a full report of its proceedings will be likely to be widely in demand.

Since the date of the first congress, now several years ago, many subjects, both collaterally and directly related to the main topic, have engaged the public mind, and have received due investigation, including the theory and practice of the Koch system. And with reference to this alone, and the important question of its satisfactory success, or partial failure, and its true and *proved* position in scientific and practical estimation, the convocation of the new congress would be justified, as well as the expectation of obtaining new and important light upon a subject of literally vital interest, upon many points of inquiry which are still waiting solution.

Veterinarians especially will, no doubt, take great interest in the coming discussions, and we hope to be able to lay before our readers at an early day a complete and satisfactory review of the congressional labors.

It is to be hoped that some of our associations may in some of their meetings also take hold of this subject. Tuberculosis is rather prevalent than otherwise on this continent, and we cannot afford to ignore the efforts that are in progress among our transatlantic brethren to discover some of the things still in doubt in relation to the matter in hand.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.—Veterinarians throughout the country must have felt surprised at the fact that the Excelsior State has for many years been the only one in the Union which considered itself able to omit from its catalogue of institutions of civilization and refinement such a body as a State Veterinary Association, representing the interests of the profession in the commonwealth at large.

There were, it is true, some local societies, and somewhere good work was sometimes done; but, with these exceptions, since the demise of the old New York State Veterinary Society, which occurred some six or seven years ago, there

has been no veterinary organization in existence where scientific or professional subjects could be presented or discussed. It was, therefore, with a feeling of relief and with some hopes, and the best of wishes for its success, that we learned of the organization of the new State Society, and with pleasure that we published the news of the new departure taken by the veterinarians of Western New York, and of the events which transpired at the meetings held January and July last and January of the present year.

While looking for a notice of the second semi-annual meeting, which was to have been held this month, we received the following letter from Dr. N. P. Hinkley, the Secretary, which explains itself :

“It has been decided by the officers of the New York State Veterinary Medical Society to postpone the holding of the semi-annual meeting of the Society until Wednesday, August 12th, 1891, at 9 o'clock, A. M. It has also been decided to hold the meeting in New York City in order to accommodate the members from the eastern part of the State, and to comply with the requests of several veterinarians of New York and Brooklyn, who are taking considerable interest in matters pertaining to veterinary legislation, as brought before the annual meeting of the Society in January, 1891.”

We hope to be able in our next issue to print the program of the meeting, and we take this opportunity to urge our New York colleagues to take advantage of this gathering of veterinarians and to turn the occasion to the best possible account. They can make it available for much good if they will only take the right course.

PROF. C. B. MICHENER, D.V.S., Assistant Chief of the Bureau of Animal Industry.—Some men appear to be made of such solid material that no amount of hard work seems able to impair their stamina or produce any injurious effect on their general constitution. Others, again, of less resistant *vis*, though sometimes propelled by great impulsive energy and will-power, at last break down suddenly and collapse at once from sheer inability to *go on*, and are compelled to stop in order to recuperate and rebuild shaken health. This last

condition is well illustrated in the professional life of Dr. E. Salmon, the present Chief of the Animal Bureau. With comparatively delicate health, he has, however, within a few years accomplished an immense amount of work, and it is our sad duty to announce that for a while he is compelled to relinquish his active professional life. He is in good condition to take a rest, however, and relieve himself from the anxieties connected with his oversight of the work of his Bureau. The Secretary of Agriculture having already created the position of Assistant Chief of the Bureau of Animal Industry, and appointed to fill the position a veterinarian well known to the profession, well acquainted with the work and prospective duties of the Bureau, and possessed of great administrative abilities, there will be no break in the work, and the machinery of administration is not likely to stop, or even rub.

Professor C. B. Michener, D.V.S., received the appointment on the 28th of May and began his duties on the 1st of June. He has now removed from New York and transferred his residence to the city of Washington. The Doctor has our best and most sincere wishes, and we feel sure that the Bureau will find in him a thoroughly competent and faithful officer.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—The following notice was received at a late hour from the worthy Secretary of the Association:

SPECIAL NOTICE.

To all delegates in attendance at the Convention of the United States Veterinary Medical Association:

The Committee of Arrangements have selected Willard's Hotel as headquarters. A rate of \$3.00 per day will be given all delegates in attendance.

The Convention will be held in Willard's Hall, in the hotel building.

All delegates and members in attendance will register at the respective desks of the Eastern, Central and Western Reception Committees, and all information will be furnished at these points.

The veterinarians of Washington and Baltimore will tender a lunch to all in attendance on the 15th of September.

A banquet will be given at Willard's hotel on the evening of the 16th, at a cost of \$7 per plate.

An excursion to Mount Vernon on the 17th is in contemplation, special rates being conceded to the members,

ORIGINAL ARTICLES.

KOCH'S METHOD WITH TUBERCULOSIS

AND THE EARLIER USE OF CORRESPONDING PRODUCTS IN
OTHER CONTAGIOUS DISEASES.

BY JAMES LAW, F.R.C.V.S., Cornell University, Ithaca, N. Y.

(A Paper read before the New York State Veterinary Medical Society.)

(Continued from page 126.)

April 21st I inoculated a yearling heifer, No. 7, in the tail and left flank with sterilized lymph from the flank of No. 4, killed the same day. The lymph had been kept for hours at 140° to 150° F.; there was no local nor general reaction.

April 27th I inoculated No. 7 and another yearling, No. 8, with sterilized lymph that had been heated to 140° for several hours. There was no reaction.

April 22d I inoculated a yearling in the left lung and in the trachea, with fresh lymph from No. 4, just killed. In all, one and one-half ounce of the liquid was employed. From April 24th to 30th the temperature ranged in the main, 104° and 105° , and thereafter to May 20th, oscillated between 104° and the normal. Swellings appeared in the neck and in the left side in the seats of inoculation, pulse and breathing ranged high, but no distinct lung symptoms were observed. The local swellings subsided to two hard masses, like hickory-nuts, and the general disorder disappeared. Later, at the post-mortem examination, this animal showed a small sequestrum in the left lung, and old false membranes on the pleura.

EXPOSURE OF THE ABOVE TO INFECTION.

On July 15th I sent three of the survivors to Christopher Slade, Whitehall, Baltimore Co., Md., to be kept in his infected stables, and three to Mr. W. W. Hubbs, Newtown, Queens Co., L. I., to be placed with his infected herd in the close buildings of a town dairy.

Three months later I heard from both gentleman that not one of these cattle had shown a sign of lung plague.

TABLE SHOWING LUNG PLAGUE INOCULATIONS.

No. of Subjects.	INOCULATIONS.		Intervals between Inoculations.	Inoculation with Lymph of Acute Lung Plague.	Cohabited with cases of Lung Plague.	Time from last Sterilized In- jection to Ex- posure to dis- ease.	Results.
	With old Sequestrum of Lung Plague.	With Lump of Acute Lung Plague Steril- ized by Heat.	Days.	Time.	Month.	Days.	
2	2 times.	.....	42	1	3 months	28	Nil.
1	2 “	.....	42	1	.....	28	“
1	.....	.....	.....	1	.....	.....	Lung Plague
2	.....	1 time.	.....	.....	18 days	13	Nil.
1	.....	2 “	5	.....	3 months	79	“
1	.....	1 “	.....	.....	3 months	79	“
1	.....	.....	.....	1	.....	.....	Lung Plague

FURTHER EXPERIMENTS WITH LUNG PLAGUE.

In August, 1883, I inoculated with lung plague exudate sterilized by heat on a number of cows going into dairy stables in New York and Brooklyn. One went into an infected stable in Seventieth St. and Second Ave., New York, and two went to McDonald’s, Greenpoint, which was habitually infected. The dealer, P. McCabe, assured me a year later that none of these contracted lung plague.

April 3, 1884, I inoculated with similar sterilized exudate eight cows for J. Colman, five for — Reilly, and nineteen for Mrs. Lynch, all in Eighty-ninth St., New York, seventeen for D. F. Murphy, Ninety-second St., and second for Mrs. Barry, Ninty-fifth St., and from the later reports of these parties I have reason to believe that all the cows operated on escaped the disease which habitually existed in the locality.

Twice I have had untoward results in herds wherein the plague existed at the time. In one case the diseased lung used to furnish the lymph was an unsatisfactory specimen, having little exudate in its substance, and the disease continued to occur in the herd. In the second case the only lung

available had throughout advanced into a state of firm, dry, granular hepatization and had a mawkish, heavy odor, and no thermometer could be found marking above 120° F.; as a result the heat employed failed to sterilize, and the tails swelled as under an inoculation with the unaltered virus. The result was protective, but many lost their tails, and one Jersey died in a herd of fifty head.

Most of these cases were reported to the Fourth International Veterinary Congress at Brussels in September, 1883. (See *Compte Rendu* of this Congress, pp. 496 to 501).

EXPERIMENTS WITH ANTHRAX.

N. O. Shepherd, Skaneateles, N. Y., had nineteen head of cattle attacked with splenic apoplexy January, 1883. In a few day he lost seven adult cattle and one calf, together with a mare and colt and one pig. Eleven cattle recovered. In March, 1884, he lost one heifer, in May three young calves, in June one mare, July 3d one horse and July 6th one yearling colt. The cattle first attacked grazed in a pasture in which was a swamp and where there had formerly been a slaughter house. The horses in 1884 were kept in an orchard into which drained the yard used by the infected cattle in 1883.

July 8th I visited the herd, obtained the requisite blood from a victim of the disease, heated it for an hour to 150° F. and injected twelve cattle with one drachm each of the sterilized product. One heifer remained, and by desire of the owner this was left as a test case. Within two days the thirteenth animal died of anthrax and the other twelve survived without illness.

In 1885 I operated in the same way on a large herd of cattle in Columbia County, N. Y., among which anthrax had appeared. This herd escaped without a single loss.

From the early eruption of symptoms and the rapid progress of anthrax it is especially favorable to such treatment in infected herds. The truly sick can easily be picked out, and the inoculation of the others is likely to prove protective. The shortness of the incubation, and, above all, the absence of

accult and chronic forms of the disease saves the operator largely from the dangers that beset him in such affections as lung plague and hog cholera.

EXPERIMENTS WITH RABIES.

1st. April 2, 1886, I injected hypodermically in the back of a rabbit (No. 1.) ten drops of a lactescent fluid made with the brain of a man who had died of hydrophobia March 30th. May 18th the same rabbit was again injected hypodermically with brain matter of a dog which died May 17th of rabies. June 14th (seventy-two days after the first inoculation) this rabbit was found paralyzed, the paralysis increasing the two following days, so it was killed June 16th and utilized for further inoculations.

2d. April 3d I injected on the left cerebral hemisphere of rabbit No. 2 the same fluid (from the human brain) used in No. 1. Rabbit was dull for three days, but ate its food. After this it seemed well and lively up to the 18th inclusive. April 19th in the morning it was paralytic but still fed. April 21st the paralysis had become complete, and the body was becoming cold. At 4 P.M. it was found dead. The attack came on on the 16th day after inoculation, the regulation time for rabies resulting from inoculation on the brain.

3d. April 3d I injected a black and tan terrier, No. 3, in the flank with twenty drops of the same fluid used for Nos. 1 and 2, but which had been heated for an hour to a temperature ranging from 150° to 180° F. April 19th and 20th two other inoculations were made in the flank with the same sterilized liquid as before. April 22d an inoculation was made on the cerebrum of a milky fluid made by mixing a portion of the medulla oblongata of rabbit No. 2, which died the day before, with boiled water.

May 17th the dog which had lost appetite for several days snapped at a stick and later at my leg. It was found dead next morning. It is noticeable that twenty-five days elapsed before symptoms appeared. The rule is that after inoculations on the brain symptoms set in in fifteen days; it is, therefore, reasonable to infer that the first inoculation with sterilized virus had conferred a partial insusceptibility.

4th. April 22d I inoculated in the back hypodermically a rabbit, No. 4, with twenty drops of the mixture of the medulla of rabbit No. 2, diluted with boiled water. May 18th the same rabbit was again inoculated with brain matter of the dog No. 3. This rabbit was found dead November 29th.

5th. April 22d I added three grains of medulla of No. 2 to six drachms water and heated for an hour to 150° to 170° F., leaving the vessel wrapped in a rug so that it remained warm till morning. April 23d heated the mixture till it began to simmer, and injected one drachm hypodermically in the back of rabbit No. 5. May 18th inoculated this rabbit in the back with brain matter of dog No. 3. February 24th, 1887, injected on the left cerebral hemisphere ten drops of a mixture of a healthy rat's brain and boiled water. April 15th this rabbit was in good health, when I had to leave him for Chicago.

In view of the claim that healthy brain matter inoculated on the cerebrum would kill in sixteen days by paralysis, on February 24th, 1887, I inoculated the brains of three additional rabbits with matter from the brain of a rat just killed, but all remained well when I was called by the United States Government to go to Chicago April 15th.

We have thus traced some landmarks of the incipency and development of the doctrine of immunity by the use of the purely chemical products of the plague-germ. We have seen the principle applied in practice to anthrax by Toussaint in 1880. We have seen it applied to swine-plague by Law almost at the same date, and published in the Agricultural Report for 1880. We have seen it applied to lung-plague by Law in 1882, and recorded in the report of the International Veterinary Congress of 1883. We have seen it applied to swine-plague in pigeons by Salmon and Smith in 1886, and set forth in their paper presented to the Biological Society, Feb. 20th, 1886, "On a New Method of Producing Immunity from Contagious Diseases." Finally we have seen the experiment on rabies by Law in 1886.

Contrary, therefore, to the impression that Salmon and Smith inaugurated this method, the first successful step had been taken six years before by Toussaint, and the indispu-

table records show that I had a gratifying measure of success with three plagues five, four and three years respectively, before the successful experiments of Salmon and Smith, on which they based their "New Method." I say this in no disparaging spirit, as no one is more ready than I to acknowledge the great work that Drs. Salmon and Smith are accomplishing for the country. They can well afford to allow the justice of my claim to priority in this matter.

OBSCURITIES AND DIFFICULTIES IN KOCH'S METHOD.

While the basis of Koch's fluid is the chemical products of the bacillus of tuberculosis, the use to which he puts it, of a curative rather than a prophylactic agent, introduces an element of difficulty. The tendency of tuberculosis is to death of the tubercle. The chemical poisons may therefore be looked upon as necrosing ptomaines. It would seem therefore as if its sole profit must result from the expediting of this process. In a lupus, or other superficial tuberculous product, this may prove curative, but in the case of a tubercle imbedded in the depth of a solid organ, it puzzles one to see how the dead mass is to be eliminated and a recovery secured without a general diffusion of the contained bacilli. Koch himself allows that the bacilli are not all killed. And now Virchow, on the strength of twenty-one post-mortem examinations of individuals treated by Koch's method, asserts that it endangers the diffusion of the germ and the onset of a general tuberculosis. It now appears that some cases of lupus are refractory. Similarly it would seem as if the method would entail great risk in case of tuberculosis of the bowel. Here the resulting necrosis must endanger perforation of the intestine and septic peritonitis.

But again tuberculosis can hardly be classed among non-recurring diseases. Though its subject acquires in time a partial tolerance of the poison, yet this does not forbid a continuance of the tuberculous process for a long lifetime in man and beast alike. A temporarily dormant state of the disease does not hinder its breaking out anew in an acute and generalized form under unwholesome conditions of life. How

often do we see one or two calcified tubercles, in a system the subject of acute tuberculosis. *Prima facie*, therefore, it would seem as if tuberculosis did not belong to that class of diseases for which a personal immunity of a reliable kind could be acquired. But if so, is not benefit from Koch's method to be limited in the main to the process of local necrosis of superficial tubercle, and of such deeper formations as can be safely reached and removed by surgical means? It seems that the great bacteriologist himself is aware of this, and is calling in the aid of von Bergmann for the subsequent resection of the diseased joints. If the bacillus escapes from the necrosed tubercle into the adjacent living tissue the vitality and antagonism of which is reduced by contact with ptomaines, there is everything to favor the formation of a new colony.

Even the alleged value of the injection as a means of diagnosis is now falling into doubt. The febrile reaction sometimes occurs in the non-tuberculous, and some unquestionably tuberculous subjects do not show it. Koch justly claims a diagnostic value for the local reaction only. This may be itself incapable of diagnosis in internal tubercle.

On the whole there seems to be good reason for moderating the extravagant expectations with which Koch's tuberculosis treatment was heralded. Much of the unreasonable claims made for him was doubtless due to the high reputation of the author of the method, and his known habits of carefulness and thoroughness, but in this case his, perhaps too precipitate, launching of the fact of his discovery, and the mystery with which he surrounded its real nature fostered hopes and generated surmises, which he himself did not literally claim, and which have been to a greater or less extent doomed to disappoint. That Koch has inaugurated a method of great value for a limited number of cases of tuberculosis (the superficial, the incipient and those that can be supplemented by surgical measures) is undoubted, but for another class of these cases its value seems to me extremely apocryphal, and to expect from it an acquired and permanent immunity would seem to contradict the nature of the disease.

ECLAMPSIA—PARTURIENT APOPLEXY.

By DR. TAIT BUTLER, V.S., Davenport, Iowa.

In the December number of the REVIEW was published a very interesting article from the pen of Dr. W. L. Williams, of Bloomington, Ill., on "Parturient Eclampsia in the Mare."

In speaking of eclamptoid diseases attending parturition in various animals, he takes occasion to intimate that, in his opinion, parturient apoplexy in cows and eclampsia in women are diseases due to the same etiological moment, or rather that they are one and the same disease manifested in the two classes of subjects specified.

It has appeared to me that in the study of diseases veterinarians have been too apt to search for a disease affecting the human subject, bearing a more or less close resemblance to the one under consideration, and then taking it for granted that causes similar to those producing the former were responsible for the latter. Reasoning by analogy, in regard to such matters, may usually be correct, but it is by no means a reliable method of procedure in all cases, and to my mind the case at point is a marked example of its fallibility.

Dr. Williams, however, may have reached his conclusions by a correct system of careful reasoning, but a preponderance of evidence, as I see it, scarcely justifies such an opinion. In the interest of progress in the study of parturient apoplexy in the cow, it is important that this point be definitely settled. For if it is once fully demonstrated that these two diseases are due to the same causes, and that they are of the same pathological nature, then all discoveries in relation to the etiology, pathology and therapeutics of the one may be correctly applied to the other. Again, if it be decided that they are not due to the same nor similar causes, and consequently not identical in their nature, a position will have been reached conducive to a more thorough and original investigation of this fatal disease of cows. It is, therefore, with the hope of aiding toward this desired consummation that I attempt a short review of the subject.

The etiology and pathology of neither of these diseases are thoroughly understood, and therefore we shall first briefly review those clinical phenomena that numerous accurate observations have shown to be constant results of these diseases. The premonitory symptoms of the disease known as eclampsia parturientum are given by Lusk* as "headache, often limited to one side, vertigo, loss of memory, gloomy forebodings, flashes of light before the eyes, contracted pupils, amblyopia, sometimes amaurosis, ringing in the ears, dyspepsia, nausea, vomiting, dyspnœa, œdema of the face, of the labia majora and of the extremities, and finally, and of first importance, the presence of albumen and of casts in the urine." If there are premonitory symptoms of parturient apoplexy in the cow they are usually observed. However, Fleming,† after saying that "the disease sets in suddenly after calving and *without any premonitory symptoms*," states in the next paragraph that "in some instances before the symptoms commence, the lacteal secretion is either diminished or suspended."

Professor Williams‡ says, that "most commonly there are some premonitory signs. The secretion of milk is stopped, the cow hangs its head, ceases to feed, and paddles with the hind feet." From the foregoing it is obvious that a comparison of the prodromata can be of but little value in deciding the question at issue; but one or two points seem worthy of notice. The most important and, in fact, the only constant premonitory symptom of parturient apoplexy is a more or less extensive diminution in the lacteal secretion. This is not recorded as a premonitory symptom of eclampsia in women. Another point worthy of notice is that œdema of the face and extremities is one of the most reliable signs of approaching eclampsia in women, but in parturient apoplexy in cows this condition is never present. Again, amaurosis is quite a common premonitory symptom of eclampsia, but no record of it in such a connection is made by veterinarians.

* "Science and Art of Midwifery," page 561.

† "Veterinary Obstetrics," page 657.

‡ "Principles and Practice of Vet. Med.," page 495.

It is frequently seen in pregnant cows a short time before, or at term, but such cases are not followed by parturient apoplexy. Of course, when well-marked coma becomes established amaurosis is present in this as well as other diseases, but it does not bear the same relation to parturient apoplexy in cows that it does to eclampsia in women. These, it will be observed, are important differences, even in the prodromata, sufficient to more than offset any similarity which might seem to exist.

We now come to a consideration of those symptoms revealed to the physician without a physical examination. In eclampsia in women these are as follows: The face, which at first presented a livid pallor, rapidly changes its outlines. The eyes roll in their orbits and the lids open and close rapidly. The pupils are dilated and insensible to light. The mouth is distorted and usually drawn to the left side. The eyes become fixed on that side toward which the commissure of the lips is drawn. The jaws rise and fall spasmodically, while the projecting tongue is lacerated by the teeth. Blood and saliva form a froth that dribbles from the mouth. From the head the convulsions extend to the neck, body and limbs, frequently producing a true state of opisthotonos. The respiratory muscles being implicated, breathing is momentarily stopped. The face becomes red, swollen and tumified as in asphyxia, and the carotids beat heavily. Abdominal evacuations usually occur, but that of urine is not very frequent "*owing to the small amount of urine in eclamptic patients.*"* These phenomena are all usually presented in from twenty to thirty or forty seconds, and are followed by a varying period of rest and sopor, usually succeeded by another and still another attack.

The corresponding symptoms of parturient apoplexy in the cow are, hanging of the head, alternated with general uneasiness, heavy and fast breathing and difficulty in standing, and especially in moving the hind parts. When the animal is no longer able to stand a position is usually assured

*Carpentier, "Cyclopedia of Obstetrics and Gynecology," translated by Grandin, vol. II., page 112.

of a more or less diagnostic character—the head, being brought back to the left side, lies against the shoulder. Periods of sopor or coma are usually alternated with those of delirium. During these latter the eyes look wild and staring, the lids twitch and tears flow over the face. Violent delirium may occur at short intervals, but usually the coma rapidly increases, to be broken only at long intervals, or at death, by delirious movements.

It will be observed that the most striking point in this class of symptoms of the two diseases is the great prominence of *convulsions* in women and of *coma* in cows. This difference is sought to be explained by a fancied higher development of the nervous system of the former. Numerous observations of the phenomena exhibited during all stages of parturient apoplexy have never revealed a single genuine convulsion, except perhaps the throes of death might be so considered. Moreover, we have never talked with a veterinarian on this point that a little careful questioning did not prove his so-called convulsions in parturient apoplexy to be none other than stages of delirium. The marked difference between delirium and convulsions is usually overlooked by veterinarians, but I do not deny the possibility of their occurrence in parturient apoplexy. I merely state that I have never seen them, nor have I had satisfactory evidence of others having seen them. Lack of nervous development certainly does not explain their rarity or absence, for we have seen as many as *thirty-seven genuine convulsions in a cow*, due to gastric irritation produced by eating too freely of “hotel slops;” not delirium, but genuine convulsions, occurring at intervals of from two to thirty minutes, and lasting from thirty to ninety seconds.

Thus far in our examination of the subject there has been an apparent, if not real, similarity between the two diseases, but no more than exists between other two entirely distinct diseases occurring in either class of subjects. Moreover, with this the resemblance ceases, and a consideration of the clinical history and the symptoms revealed by a physical examination indicates such a difference in phenomena that it is

remarkable that the diseases can be considered identical either in etiology or pathology.

A physical examination of the human subject reveals a rapid, weak pulse, ranging from 100 to 140 beats per minute. The temperature, according to Hypolite, ranges from 100-4° F. to 104° F. and in the majority of cases rises from the beginning to the end of the attack. Between the convulsions it falls only slightly, to rise again with the return of the spasms. There is usually but little urine in the bladder, consequent upon a diminished secretion immediately preceding the attack. In fact, complete anuria exists in many cases.

A similar examination of the cow in parturient apoplexy reveals a pulse which, during the stages of delirium occurring at the beginning of the attack, is slightly increased in frequency; but as the disease advances and coma becomes well marked, it is *slow and weak*. The temperature gradually falls from the beginning until death, or until the disease begins to abate; with, perhaps, a slight upward tendency during the stages of excitement which usher in the disease. The bladder is usually distended with urine, owing to an increased secretion immediately preceding the attack, and in no case is anuria a present until after well-marked paralysis.

From the above we notice that in women the pulse is *fast and weak*, temperature *high*, and urine *scant*; while in the cow the pulse is *slow and weak*, temperature *low*, and urine *abundant*.

It is usually sought to explain away these differences, as well as all others, by the erroneous assumption that they are due to the differences in the organisms affected. The physiological differences between the two classes of patients, although slight, might account for certain trivial differences in the clinical phenomena, but neither comparative physiology nor actual clinical experience justifies the belief that they account for a high temperature in the one patient and a low temperature in the other.

All authorities on human medicine agree that in women sufficiency from eclampsia the temperature is elevated above normal. Veterinarians are equally unanimous that in cows

with parturient apoplexy the temperature is lower than normal, or at least that it is not elevated. *Will Dr. Williams please inform us of a single example of a disease affecting women and cows, known to be due to the same causes and possessing similar pathological lesions, where this difference in temperature is admitted?*

My statement of the condition of the pulse in cows is, I am aware, antagonistic to the "authorities," but personal observations led me to doubt their accuracy on this point, and an extensive correspondence with practical veterinarians, instituted for the purpose of deciding this question, indicates that my experience is fully corroborated by theirs.

Neither is the statement that the urine is abundant in quantity in cows with parturient apoplexy quite in harmony with the views of all veterinarians, but if applied to a period immediately preceding the attack, or during its early stages, that statement is strictly correct. The distended condition of the bladder so frequently met with by the veterinary practitioner is due to an established law, applicable to the cow as well as other mammalia and explicable by perspicuous physiological facts, namely, that during a variable period immediately following parturition the secretion of urine is greater than during any other equal period of health. It is, therefore, the opposite condition in women which all writers agree indicates the approach of eclampsia and marks its early progress.

A review of the clinical history of the two diseases reveals the same striking lack of coincident facts. In women "age does not appear to have any great influence as a cause, although it is between twenty and thirty years that eclampsia is most frequent, but this is not surprising, since it is at this age that women are more likely to become pregnant."* Parturient apoplexy appears in neither young nor old cows.

In women "primiparity is without doubt the most frequent predisposing cause. Most authors will agree in this."†

* Carpentier, "Cyclopædia of Obstetrics and Gynecology." Translated by Grandin, II. page 95.

† Ibid.

The average, computed from the records of twenty-one eminent writers, is 3.24 primiparæ to 1 multipara ; but Madame Lachapelle puts it as high as 7 primiparæ to 1 multipara. Parturient apoplexy does not occur in primiparæ no matter at what age they first become pregnant. Not one case is recorded as occurring in a primipara and few will be so bold as to assert that all cows become pregnant before maturity, and that hence maturity and not multiparity is the important factor to be considered in this connection. For a preponderance of evidence certainly indicates that age and primiparity act in diametrically opposite directions in the two diseases.

According to Bailly the disease occurs in pale and anæmic, as well as in strong and vigorous women. In cows, plethora accompanied by maturity seems to be an essential condition, or at least is nearly always present. A large development of the lactiferous function also seems a necessary condition to the disease in cows, but no mention is made by writers on human medicine of such being the case in women.

“ The influence of the length of labor in the production of eclampsia is undisputed.”* Moreover, “ the longer the labor, the more difficult the delivery, . . . the more depressing is the outlook.”† Among veterinarians it is equally undisputed that parturient apoplexy never follows a long nor difficult period of labor. In women there appears, in a large majority of the cases, to be a direct connection between the act of parturition and the disease, but in cows no such direct connection can be discovered. In the former an attack of the disease at any time during pregnancy is almost invariably followed by labor, while in the cow such a result, providing it be conceded that the disease occurs before labor, is by no means so common. According to Depaul more than 93 per cent. of the cases of eclampsia in women occur before or during labor, but in the cow it is safe to say that 99 per cent., if not all, of those cases of true parturient apoplexy occur at from twelve to forty-eight hours after labor.

* Carpentier, “ Cyclopædia of Obstetrics and Gynecology.” Translated by Grandin, Vol. II. page 96.

† Lusk, “ Science and Art of Midwifery,” page 564.

In women "eclampsia predisposes to post-partum hæmorrhage,"* but parturient apoplexy occurs only when such rapid and thorough contraction of the uterus has taken place as to preclude the possibility of post-partum hæmorrhage.

We have now arrived at a point where a consideration of the etiology and pathology of the two diseases would appear appropriate. The impression irresistibly forced upon a student of the literature on the subject is that, in this field, there is much speculation and more uncertainty. During the whole history of the disease known as eclampsia in women, theories calculated to explain its nature have followed one another in such rapid succession as to be absolutely bewildering. Many have been ingenious, others have explained satisfactorily certain phenomena of the disease, but none have fully met the exact requirements of medical science. However, there are two theories that have received more attention than all others combined. These are, first, that "eclampsia is due to œdema cerebri and the sequential anæmia" (Traube-Rosenberg theory); second, that "eclampsia is due to the retention in the blood of all the effete materials which find their excretion by means of the kidneys."† (The theory of minæmia).

The former is founded on the *fact* that there is intercranial hæmal obstruction, the result of an altered condition of the circulation produced by increased aortic pressure, and the *supposition* that the resulting cerebral hyperæmia is always succeeded by œdema and anæmia. This is the theory borrowed, by veterinarians, to explain the phenomena of parturient apoplexy, notwithstanding that it has been discarded by the majority of writers in human medicine. It no more meets the full requirements of the case in veterinary than in human medicine, but when its validity is questioned veterinarians are always ready with the question, "if hydræmia and increased blood pressure are not the cause of parturient apoplexy, what is?" I freely confess that I don't know, but I do know that eclampsia can occur entirely independent of hydræmia, or increased aortic

* Lusk, "Science and Art of Midwifery," page 563.

† Spiegelberg.

pressure (the two principal causes of œdema and anæmia cerebri) as in cholera, where the opposite condition exists."* The theory of urinæmia is the one most generally accepted in human medicine, nearly all writers and practitioners agreeing that if it does not, in all cases, account for the entire phenomena of eclampsia it certainly has much to do with its causation. But it is impossible that urinæmia could be the cause of parturient apoplexy, for there can not be urine intoxication without suppression of urine, and that condition, as before stated, is not present.

Having discussed this point at considerable length in a former article which was published in the REVIEW, it is not considered best to occupy space with a rehearsal.

ACTION OF COLD APPLICATIONS AND OTHER AGENCIES UPON BODILY TEMPERATURE.

BY KENELM WINSLOW, B.A.S., M.D.V., M.D., M.M.S.S., Instructor in Therapeutics and Materia Medica at the Veterinary School, Harvard University, etc.

The writer wishes to express himself as heartily concurring in the general sense of the remarks so ably set forth by Dr. Macaulay, in the VETERINARY REVIEW for March, concerning the use of cold applications in the treatment of pneumonia; more especially so because it appears as if this were the line upon which improvement in antipyretic treatment was to be brought about. While particular stress will be laid upon the advantages to be derived from the use of cold, it is far from the purpose of this article to seem to depreciate the co-operative value of other antipyretic measures.

Dr. Macaulay makes a strong point in emphasizing the fact that counter-irritation has a tendency to unfavorably diminish respiratory movements in pneumonia. It does this not only mechanically, by making respiration painful, as that writer shows, but also through stimulation of the inhibitory nerves governing respiration.

Exception must be taken, however, to the statement that

* Billings, "Eclampsia Parturientum," Journal of Comparative Medicine and Surgery," Vol. V. page 127.

a rise of temperature is produced by counter-irritation. Ellenberger (*Lehrbuch der Allgemeinen Therapie der Haus-säuge thiere*), page 307, has by proven that neglecting the slight transitory rise of temperature occasioned by the primary stimulation of the calorifacient centres, and accompanied by contraction of the peripheral vessels, increased cardiac action with diminished rate of respiratory movement; neglecting these, we repeat, which are merely ephemeral, the permanent effect is a great reduction of temperature, owing to the loss of heat from the weakened and dilated vessels, and also to the fact that the heat-forming centres become exhausted by over-stimulation.

This is what happens with extensive counter-irritation, and it is remarked by the same authority, (*loc. cit.*), that this effect has only been temporarily interfered with when such irritation has occasioned a great deal of movement of the animals experimented upon.

Extensive counter-irritation may, therefore, be regarded as an antipyretic agency, but it is doubtful whether it is a judicious procedure mainly on account of its general harassing effect upon the patient.

As heat and cold are employed almost interchangeably in the treatment of similiar conditions, it may not be out of place to digress a moment to contrast the action of the two.

Extreme heat and cold are alike in their effect upon animal tissue, causing paralysis of the vasa motors, passive congestion, inflammation, destruction of tissue and death. It is also a curious fact that the sensation occasioned by intense heat and cold are similar, for it is reported that the natives of India in first handling ice said they could not hold it because it burned their fingers. Moderate heat locally applied has a soothing effect upon the nerves, vessels become dilated, tissue metamorphosis is increased, parts are relaxed and softened, and suppuration and sloughing favored. On more remote parts, heat, as in the application of counter-irritants to the chest, causes the intra-thoracic vessels to be reflexedly contracted, blood is drawn to the surface of the parietes by the mechanical effects of vascular dilatation there; pain is relieved by some such action as occurs in the use of the twitch,

in veterinary practice; the respiration is slowed, the heart stimulated, and temperature reduced.

Moderate cold applied locally has also a sedative and benumbing effect; the vessels become constricted, tissue metamorphosis is diminished, the parts are constricted, and swelling is reduced. Suppuration and sloughing if they occur, progress but slowly. The writer has often seen abscesses treated unwittingly by ice bags, when the pus was turned out of the consistency of ice cream, and the whole nature of the process was literally that of a very "cold abscess."

The consideration of the more remote effects of cold will be deferred until later.

Antipyretic treatment, with which we will mostly deal, may be classed for convenience into three divisions, depending upon the three factors concerned in calorification in the body. The afore-mentioned factors are; heat production, heat dissipation, and heat regulation. These elements are controlled by nervous centres whose exact localization is as yet undetermined.

Heretofore reliance has mainly been directed to increasing heat dissipation in fevers. This has been accomplished in great part through the agency of diaphoretics, combined with the use of cardiac sedatives or general stimulants as the case demands, and such has been the classical method of symptomatic treatment in fevers. On the other hand, the more modern or "true" antipyretics influence the calorific centres to lessen heat production.

The employment of these recent synthetic compounds, of the so-called aromatic series, seems to be on the wane. Their usefulness has been said by one author, seemingly of agnostic tendencies, to consist in enabling animals to die with a normal temperature—no great satisfaction, surely, to the unprofessional owners of our patients.

Finally, we have such agencies as cold irrigation, and other applications, which not only directly and physically abstract heat, but improve and affect the heat regulatory functions, and apparently have a much deeper and farther reaching action than any other antipyretic measure.

It has been proved that the wonderfully beneficent effects

of cold are due essentially to the general excitation or invigoration it produces on the nervous system. The various results thus effected by cold external applications have been admirably described by Dr. Whittier, in his address at the annual meeting of the Massachusetts Medical Society, 1890.

The following are among the most important of these : an improvement of innervation of the circulatory, digestive, respiratory and excretory organs, with a lessening of tissue waste. The failing digestive functions are reinvigorated, general nervous irritability is relieved by the action of the cooled blood on the nervous centres, in coursing through the brain, and a general tonic and stimulating effect upon the nervous system is in this way brought about.

But lest in advocating too strenuously this antipyretic remedy, we are accused of basing our conclusions on purely hypothetical reasoning, let us now turn to the practical results afforded by it. Are we not immediately confronted by statistics, in the domain of human medicine, mounting up into the myriads of cases, proving the vastly superior merits of this kind of treatment? And this, too, not only in the treating of typhoid and other continuous fevers, but even in the case of pneumonia and kindred affections, which are especially unsuitable for such treatment, in the eyes of the laity, and, indeed, of many professional brethren, because forsooth ! these diseases are said to result from cold, an entirely irrelevant and unphilosophical conclusion, allowing that their premises are correct.

Cold doubtless predisposes to catarrhal and pulmonary disorders, but it is extremely questionable whether it is the primary factor often, and the manner of "catching cold" is a very different matter from the mode of giving it remedially. Dr. Fenwick, in an analysis of one thousand cases of pneumonia treated in the London hospital, finds that the mortality when cold was used, in one form or another, to be only ten per cent as against twenty three per cent with the employment of any other method of treatment. The number of cases treated with cold was one hundred and eight.

Considering the close pathological connection which influenza has in relation to pneumonia, how the former tends

to merge into the latter, it seems as if the cold treatment should be as applicable in one case as in the other. This antipyretic measure is indicated as a rule in all septic or essential fevers, when the vital processes are endangered by the continued high temperature. It is contra-indicated in symptomatic or catarrhal and other self-limited febrile disorders when the system is not thus threatened.

It is not within our province or scope here to discuss what such dangers, occurring in the course of fevers, are ; but they may be said briefly to include general inanition due to excessive tissue waste, and loss through exudative processes ; cardiac failure owing to increased functional activity, degeneration of the myocardium, and possibly to the direct effect of the blood poison on the heart ; disturbances of the sensorium occasioned by the great heat of the blood ; and finally, parenchymatous degeneration of various organs, as of the heart, kidneys, liver, spleen, and muscles. The cold bath, ice-cradle, and like measures, are ostensibly unsuited for veterinary purposes. The employment of the wet sheet, sprinkled occasionally with cold water and maintained in position till the temperature falls, and followed by vigorous rubbing and dry blanketing, or the method of which the cold wet blanket is covered by a rubber sheet, and then with dry blankets, forming what the Germans know as the "Priessnitz" application, seem the most practicable procedure. For the latter is claimed the advantages belonging to both refrigerants and counter-irritants. First ; cooling occurs from the physical abstraction of heat and then reaction takes place with vascular dilatation, revulsion of blood to the surface, and a soothing effect follows, which the moist warm heat produces, resembling altogether in its secondary action, a hugh, light poultice. As far as the objections to the use of such cold applications are concerned, it seems that the only particular difference between its adaptability in veterinary practice and in human medicine, lies in the fact that the bodies of our patients are completely covered with hair, and therefore need to be more carefully protected for a longer time against the danger of too long-continued evaporation.

The writer feels that it is rather humiliating to be unable

to bring forward practical results of such treatment as herein advocated from personal observation, although he hopes soon to be in a position to do so, but a somewhat extensive hospital experience in this treatment of human beings first called his attention to the advantages that might accrue from the adoption of these measures in veterinary practice. If by thus attracting notice to this subject sufficient interest in the matter is exciting to induce practitioners to test the efficacy of cold applications in febrile disorders, this attempt on paper will be amply rewarded.

Other methods of using cold, as by cold draughts, clyster, ice-bags, etc., have not been touched upon for lack of time, but they are none the less valuable adjuvants.

A word in closing as to the advisability of lowering bodily temperature in fever. Increased temperature, although the most prominent symptom in fever, is oftentimes not the most dangerous element. Witness the tremendous progressive tendency towards a fatal termination in many septic disorders where the system seemed to be utterly overwhelmed by the profound impression made upon the whole organism by the effect of the poison, whatever it may be. It seems to be generally accepted that the nervous system is the fundamental factor concerned in the loss of co-ordination of the heat regulatory centres, whereby the heat formation is increased, and heat dissipation diminished, in this manner producing the group of symptoms we recognize as fever.

The exciting cause may depend upon bacterial origin, which again in its turn gives rise to ptomaines, combining in this manner the chemical and zymotic theories of causation into one, or it may be due to halmic alteration, traumatism or other source of nervous irritation. It appears that heightened temperature and the increased oxidation and resultant decomposition in the body occasioned by fever, are inimical to the etiological factors that cause fever. It is even asserted that in intermittent fever the non-febrile period merely affords an interregnum in which the pugilistic bacteria can reinforce themselves for the febrile attack, and, partially succumbing to the increased body heat which they themselves occasion in the course of the onslaught, are forced to retire until they

are sufficiently recuperated for another assault. In other words, as has been more tersely and less grandiloquently stated, the bacteria light the fire which ultimately consumes them. Thus is the *vis medatrix naturæ* again exemplified. On the other hand, the condition of the body may determine to some extent, the existence of fever. For it is said that crisis or lysis in fevers occurs either because the cause of the fever has been destroyed, or because the heat centres have become exhausted. In the latter instance fever is re-established with the recuperation of the calorific centres.

But is it not a reasonable proposition, that while fever may be a remedial agency in its way, yet like any other potent measure, it must be controlled and kept within bounds, as in using a drug of great efficacy we must regulate the amount administered, else what may be its power for good become transformed into an instrument for evil.

A NEW SPECIES OF TREMATODE INFESTING CATTLE.

By DR. ALBERT HASSELL, Veterinarian, Baltimore, Md.

In the collection of the Bureau of Animal Industry is a bottle containing specimens of a trematode new to science, of which I give the following character: *Fasciola carnososa* (nov. sp.)



Fasciola carnososa. (Hassell), from liver of a Colorado steer—natural size.

Body flat, elliptical in outline, very thick, margins straight; mouth terminal, lip circular with triangular orifice; acetabulum small, circular, with triangular aperture; genital pore small, situated midway between the mouth and acetabulum. Length, 45 millimetres; breadth, 22 millimetres at widest part; habitat, liver and lungs of ox.

In general appearance this parasite differs from the *fasciola hepatica* (Linn) and *fasciola gigantica* (Cobbold) in many characteristics. In point of size it is intermediate between the two, having an average length of about 45 millimetres. In outline it differs from either by having no defined head

and neck, the body increasing in size gradually from the anterior extremity to the widest portion. The posterior extremity is rounded, not pointed as in *F. hepatica*. Its color is slate blue on the ventral surface, due to the intestine being visible under the skin. The skin, apparently smooth to the naked eye, is seen on examination to be covered with minute spines, much smaller than those covering the body of *F. hepatica*. The genital pore is situated midway between the mouth and ventral acetabulum. The intestine is plainly visible under the skin and consists of two main branches arising from the termination of the œsophagus, and passing directly downward in the centre of the body, being separated from one another by a very narrow space, giving off in their course numerous branches which divide and subdivide, making the intestinal arrangement appear more complicated than either that of *F. hepatica* or *F. gigantea*. Each final subdivision ends in a cœcum. The specimens from which this description is taken have been in alcohol four years, and are not in condition to give accurate anatomical details. On some future occasion I may have an opportunity to describe its structure more definitely.

ACUTE DYSPNŒA.

Translated by RICHARD MIDDLETON, A.B., D.V.S., Philadelphia, Pa.

Dyspnœa in general, when occurring in our domestic animals, is seldom an object for therapeutic interference. If we exclude the so-called "heaves" of horses, which only demands attention from its forensic significance, the dog only, in his better situation, remains for our consideration.

The usual variety in the dog develops itself insidiously in the course of his life, unnoticed by the owner; it is the consequence of obesity, of cardiac weakness and dilatation and of fatty metamorphosis of the heart; or it is met as a sequence of diseases of the chest and abdomen. The question then has to do with a chronic dyspnœa, with a difficulty of respiration which increases with the lapse of months and years.

The remaining variety is the subject of this discourse. This afflicts an animal as an idiopathic lesion, independent of

a precursory or a contemporaneous disease ; its influence is operative only for a brief period, ten minutes, and after its expiration the victim experiences no subsequent inconvenience. Very probably this disease has already been frequently observed, but it has only come under my notice in the last decade. The two cases observed by me are as follows :

Case I. A healthy, well nourished, fat, eight-year-old pug dog became attacked with symptoms of the most intense dyspnoea. From the apparent danger in which the animal's life was suspended, he was rapidly brought to the hospital for small domestic animals attached to the Berlin veterinary college. Before this was reached, however, the patient had recovered his normal respiration. During a lapse of twenty-four hours of close observation, no new attack occurred, and the animal was discharged ; but hardly a half hour passed after his reception into the house of the owner before a recurrence happened, which was as severe as the first paroxysm. I answered as soon as possible the request that I should treat the dog, but although only twenty minutes had elapsed I arrived too late ; the dyspnoea was past. Upon entering the room I found the dog had assumed a half sitting posture, with his feet over the side arm of the sofa in the corner of which he had had the first paroxysm ; he appeared much exhausted, and viewed his surroundings as though all was strange to him. Something was evidently wrong with him ; nevertheless, an alteration of the organism, which could account for the attacks, could not be found. Auscultation as well as percussion gave negative results. In three-quarters of an hour he dismounted from the sofa, ate sugar, and drank water ; later, at the invitation of his mistress, he was ready to take a walk.

Guided by the history, I thought the difficulty lay in a spasmodic closure of the glottis, and prescribed extractum hyoscyami 0.30 g. in 30.0 g. of mel. desp., to be given within six hours. A third occurrence has not been noted since.

Unfortunately I had not an opportunity to observe the symptoms of the case myself ; but according to the detailed account of the owner, they were those of the greatest respiratory need : opening of the mouth and extension of the

tongue with cyanosis of the visible mucous membranes ; associated with these was a rattling tone, emitted both upon in and expiration.

Case II. An eight year old gelding of the better breed, became sick with a bronchial catarrh, which terminated favorably within a week. During the disease the general health was disturbed but in a slight degree. From the 6th to the 8th days the patient could be led in the open air ; the animal being so lively, and his actual condition not speaking to the contrary, it was deemed advisable to harness him to a wagon. I left directions that in two days the horse might be used for his usual task. Before 7 o'clock on the second day after this disposition of the case, I was informed that the horse was threatened with suffocation. At my arrival I found him perfectly sound, and by the most painstaking investigation, which was principally confined to the thorax, I could discover nothing of a morbid nature. On the same day about noon the attendant came with the same word, and the result of my second examination was precisely as the first. A coachman expressed himself as believing that he had observed the animal eating before both attacks ; this caused me to throw some food into the manger.

This was half consumed with great eagerness and appetite, when the horse moved suddenly back from the trough, and with separated limbs, distended head, and dilated nostrils, concentrated his thoracic and abdominal muscles in efforts at respiration.

The heart pulsation could not be felt, but the movements of the flank numbered 60-65 per minute ; anal movements were also present, from the heavy breathing. Eyes were widely open, and indicated great anxiety ; mucous membrane of the nose and mouth were cyanotic ; the gluteal region was covered with perspiration which rolled in small streams down upon the limbs.

Before I had concluded what should be done, the symptoms suddenly ceased, so that in less than ten minutes the attack was past. Gradually the breathing became more quiet and the animal observed his surroundings with a blank stare ; the sweat was removed and in a few minutes he ate the bal-

ance of his oats. No new attack was noticed during the next three days, and the horse was put to work. More for the purpose of quieting the owner, than with the expectation of receiving any benefit therefrom, a course of treatment was instituted which consisted in doses of ext. hyoscyamus given in electuary.

The cause of the dyspnœa in both these cases is a mystery. When we consider that the heart and lungs of both patients were sound, and that in other respects their functions were in no degree deficient, we are justified in coming to the conclusion that the cause was a temporary one, dependent upon transitory circumstances which were instrumental in affecting an irritation upon the respiratory center. A relationship between these cases and asthma, hysteria and similar attacks depending upon neuroses, cannot be admitted, because the latter affections are of the recurrent and chronic nature, and manifest themselves from time to time.

According to physiology, the center which presides over the rythmical movements of the lungs, is situated in the medulla oblongata, at the point of origin of the vagu and accessorius nerves ; up to the present time it has not been determined whether the activity of the same is automatic, or reflex. But experiments make it apparent that there are reflex fibers in the constitution of the tenth pair. Through these irritations the pulmonary movements are influenced in either an inhibitory or an excitative manner. The former is brought about by the expanded lungs ; the latter by the collapse of those organs. In this manner a self-regulation of respiration is generated, and a compensatory rythmus obtained.

All diseases of the lungs, heart, and their surrounding membranes modify the rapidity and depth of the breathing ; another factor which is active in bringing about the same end is a condition of incomplete decarbonization of the blood. The disproportion in the gaseous constitution of the blood must not of necessity involve the blood in all vessels ; it is sufficient when this poverty is local and confined to the vessels of the medulla ; when e. g. through a hinderance of any kind a retarding of the venous flow from the brain, by which the blood is richer in carbon dioxide and destitute of oxygen.

We will now resume the individual consideration of the cases. The dog was exposed to all the pampering and fondling that pet dogs usually receive. Nothing was denied him, and in short, the beast ruled his whole surroundings. He was accustomed to go daily either walking or riding; on the day of his first attack the weather was rainy and the owner was not well. Consequently when the animal manifested that it was time to go out, he was denied in an uncivil tone; the dog quietly sought his corner, and after about one hour received the first paroxysm. It is known that individual members of the species *canis familiaris*, especially lap dogs, have a strongly developed sensibility; they rejoice and mourn with their master, and can, by being isolated from him, be cast into illness. With unkind treatment they show anger and disgust; these by friendlier and closer association, as a rule soon pass away and in a short time are totally eradicated from the memory of the dog.

In my opinion of this case, the harsh words and disappointment were the real promoters of the attack; both caused a psychical alteration which directly induced disturbance of the respiratory tract in the medulla; probably in the following manner: the dog became vexed, and this caused increased respiration and cardiac movements with accelerated blood circulation in the brain and cord; this, when united with the plethoric state and age of the patient, gave rise to a cerebral congestion through which a misproportion in the blood gases was promoted and which disturbed the respiratory center. The second attack was due to his sojourn in the hospital and to the excitement of again seeing his owner.

Since a metaphysical activity in *equina caballus* is completely out of the question, it is necessary to seek another source of the irritation upon this center. As already mentioned, this animal was a gluttonous feeder; such masticate so rapidly that isochronous respiration is impossible. But these fast eaters do not fall sick of dyspnœa; here however the subject was in the stage of convalescence, he was hyperæsthetic. This latter fact, and the undecarbonized state of the blood, resulting from the irregularity in respiration, were sufficient to affect the respiratory center.

It may be upheld by some, that I had to do with spasmus glottis, or an œdema of the glottis. The occurrence of the former in our patients is yet to be proven; and the characteristic tone which accompanied respiration, as well as the sudden disappearance of the dyspnœa would certainly not speak for œdema glottis. Œdema of the glottis cannot develop suddenly, without previous inflammatory changes, and it cannot, within ten minutes suddenly disappear, without influencing the health of the animal. The tone was not a whistling or rattling, as accompanies suffocation symptoms, and which rapidly terminates fatally, but a regularly made noise both upon in- and expiration. I do not believe the therapy had the least effect upon the course of the dyspnœa.

PILOCARPINE IN TETANUS.

Translated by the same.

Dr. Luigi Casati successfully treated three cases of traumatic tetanus in man, by the use of pilocarpinum hydrochloricum. Two of these were given this drug exclusively, and one received it in conjunction with other medicines. Besides these results, the same authority succeeded in healing seven of nine rabbits that had been inoculated with tetanus cultures. In all the cases the recovery followed rapidly, and after a few hours nearly all the symptoms had vanished, the trismus disappearing last.

From these observations, Casati came to the conclusion that pilocarpine was the most powerful therapeutic agent against tetanus; further, that it was the best, if not the only extant antidote for the ptomainic excretions of the tetanus micro-organism.

Considering the circumstance that the treatment of tetanus in the horse, up to the present time, has been exceedingly speculative and uncertain, and that one can hardly decide from a single trial, I took occasion to institute a series of experiments with the remedy so highly praised and recommended by Casati.

At sundry times within a short period, there have come

under my care six horses suffering from tetanus ; all of which I subjected to this treatment, with the result that five terminated fatally, and one recovered. I am not inclined to increase the list of trials with the alkaloid, and I desire, therefore, to be allowed to make a detailed report upon these six cases.

I. Three and a half year old, medium weight, draught mare, well nourished. According to the unreliable testimony of the attendant, the same had received a wound upon one of the fore limbs ; upon examination only a few hairless spots could be detected about the fetlock. The course of the case was slow, and at no time was a well defined trismus present. After receiving chloralhydrate in the drink water, and æther sulphuricum in the rectum three times a day—the same treatment being pursued throughout six days—there was no bettering of condition. On the eighth day the patient was given 0.4 g. of pilocarpine dissolved in 5.0 g. aqu. distill. subcutaneously. The characteristic working of the medicament commenced within a few minutes and lasted one hour ; salivation, diaphoresis and defecation, associated with nervousness, were well defined.

Respecting the easing of the spasm, I think the same occurred after twenty minutes in the ileospinalis and gluteal muscles ; this diminution of the opisthotonus, which altogether was scarcely perceptible, remained some time after the disappearance of the symptoms caused by the injection. On the next day the muscular cramp had its original intensity ; an improvement could not be noted. On the following day symptoms of a broncho-pneumonia were detected, and after this, from the thirteenth to the twentieth days, the æther and chloral were resumed. On the twenty-ninth day the subject was delivered to the owner. There was more or less want of agility in locomotion, as well as a slight degree of trismus still noticeable.

II. Nine-year-old light draught mare. Punctured wound ; tetanus not in so developed a stage. Received chloral in drink water, and 0.4 g. of pilocarpine, injected ; no cessation in spasms. On the third, she was given 0.2 pilocarpine which induced the usual symptoms, but did not cause a diminution of the contraction ; during the same afternoon

another dose was given and also followed by profuse salivation, great anxiety and unquiet; animal died ninety minutes later, showing increased pulse and respiration.

III. Six-year-old riding gelding. Punctured wound, as in the previous case. This patient also grew worse after the incorporation of chloralhydrate in the drink. No abatement of the spasms after receiving 0.2 g. of pilocarpine hydrochloricum; we injected 0.4 g. pilocarpine on the third day, and after three minutes observed severe salivation; after ten minutes, defecation and bedewing of the surface with perspiration; very unquiet and excited; respirations increased in number, and became dyspnœic in character, until twenty-five minutes after, the case died under symptoms of suffocation.

IV. Uncertain age, middle weight draught gelding. Doses of 0.4 g. and 0.5 g. pilocarpine, subcutaneous, but a relapsing of the convulsions even during the strongest working of the medicament could not be confirmed. On the fourth day the animal died with symptoms of suffocation.

V. Nine-year-old well bred, heavy carriage mare. This was the third horse belonging to this owner, which, in the short period of a year, had died of tetanus, in the same stall. [It is hardly necessary to state that the owner was warned of the necessity of removing the floor and earth in this stall, and also to disinfect the same with sublimate solution].

In the clinic we found the pulse to be 48, respiration 48, temperature 100.7° F. (38.2° C); a swelling upon the left forelimb, but no wound. A few hours after admittance into the hospital, the case received 0.4 g. pilocarp. hydroch., which produced great excitement; animal could, with difficulty, remain standing; countenance betrayed great anxiety. It was impossible to distinguish the slightest relaxation. The approach of the attendant called forth the severest paroxysms, so that the clysters of 60.0 g. of æther were only given by the greatest care. Death came at midnight of the second day. Post-mortem showed a sero-hemorrhagic inflammation of the podophyllus tissue upon the sole of the left anterior foot. The exudate, when inoculated in experiment animals, produced tetanus.

VI. Very old and thin experiment mare. Inoculated with

a pure culture of the tetanus bacillus on the 2nd of January; on the 7th the first symptoms appeared, and on the same day the patient was given over to the clinic. Pulse 60, respiration 32-36, temperature 100.0° F. (37.8° C). The morphological picture of tetanus was complete: position characteristic—ears, neck and limbs stiff and hard, tail raised and carried out of the median line. At 2 o'clock P.M., the incisors could be separated only sufficiently wide to pass two fingers into the mouth. Patient removed to the slings, and at 2.40 P.M. took a subcutaneous injection of 0.4 g. pilocarpine; the working, which appeared in five minutes, continued three hours, and was very severe. Defecation occurred eighteen times, and the salivation lasted two hours; pulse 80, respiration 52. A spasmodic intermission was not observed, but on the contrary, the contractions were more intense, and so progressive, that in three hours one finger could with difficulty be introduced between the teeth.

Toward morning of the same night, the case had to be removed from the slings, in order to prevent suffocation, and remained apathetic upon the floor until 1 P.M., on the eighth of January, when the animal died under symptoms of intense opisthotonos.

As is known, congestion and œdema of the lungs, together with dissolution of the blood, and fatty degeneration of the heart muscle, are the most prominent and constant pathologico-anatomical alterations found in tetanoid cases.

Since the changes just mentioned,—especially the lung œdema—occurs in the tetanoid process, whether it be of long or short duration, and compromise the life of the patient, it would seem, reasoning *a priori*, that death is induced earlier through the hypersecretions of the bronchial glands, which is ascribable to the physiological action of pilocarpinum hydrochloricum. In the foregoing cases the fact that death rapidly followed the injections, confirms this view.

RUPTURE OF THE STOMACH.

BY CLAUDE D. MORRIS, V.S., Bath, N. Y.

Having read the interesting communication in the REVIEW for April, by Dr. Johnson, on the rupture of the

stomach in the horse, and after an experience of ten cases in a period of three years practice, I determined that the next opportunity I had I would make a more careful examination with a view of finding a solution to the question, *vis*: Why is it that the rupture in the external coat is of greater extent than in the internal or mucous coat?

On the morning of April 23d I was called to see a mare suffering from what the owner supposed to be colic. When I arrived at the farm, only two miles distant, I found the animal lying rather quietly. On getting a history of the case, I found that she had been at her usual labor the day previous, but on returning to the stable that evening she refused food, and manifested a slight degree of pain. She was allowed to stand for a short time before anything was done, thinking perhaps she might get over her trouble.

Later the animal received the usual "farmers" dose, soda bicarb. \mathfrak{z} i to iii water q. s. This not seeming to give the desired effect, about two hours later the animal was given a second dose, using the owner's expression, composed of three tablespoonfuls of saleratus and a teacup of vinegar. Immediately after receiving this dose the animal manifested symptoms of great pain. The owner then gave one os of tn. opii which seemed to quiet her. She was left for the night. In the morning they found her rolling and acting very uneasy, also perspiring slightly; it was at that moment that my services were sought. Upon examination found the pulse 75 and irregular, temperature 103° F., respiration 40. Gave opium and cannabis indica, also hot injection, which resulted in a free evacuation. Left three doses of opium and colocynth, to be given between then and noon, with an occasional enema.

On returning, found that she had lain quiet since my first visit, bowels had moved and micturation occurred. Pulse 80, very feeble, temperature 104° F. respiration 60. We got the animal upon her feet, which occasioned very distressing symptoms; there was a discharge from both nostrils, (a white froth), under lip pendulous, mouth partially open, tongue protruding. Frequently the animal would cramp the head against her breast, and would back around in her box. These symptoms pointed to rupture of the stomach, of which I

apprised the owner. Left full doses of morphia, to be given hypodermically every hour, and would return in the evening. At that time I found every symptom of rupture argumented, so positive that I wanted to destroy the animal as an act of mercy.

The owner would not listen to this, as she was the family pet. She died during the night; I made a post-mortem in the morning, and found the stomach ruptured, in the manner that Dr. Johnson speaks of, viz: That the peritoneal coat was torn about one and one-half inches at each end of the orifice more than that of the mucous coat, and that the torn edges through the centre of the aperture were more gangrenous than at the ends, while the torn edges of the inner coat presented the same appearance all through. The lesions were situated about one-third the distance from the greater curvature and at right angles with the posterior gastric arteries through the villous portion. This animal had shown indications of pain four days prior to her last sickness, and I have no doubt but that the indurated condition through the centre of the external aperture were due to preexisting rupture. I can only account for the preexisting rupture of the external coat, and that it is of greater extent than that of the mucous coat in this way: that the external coat is a serous membrane and practically inelastic, while that of the internal is a mucous membrane and quite elastic, and would, therefore, allow of greater dilation. On examining the stomach of the horse we find this: that the mucous coat is soft and velvety, and lays in small folds or rugæ. When we consider the structure, and the distention that this organ can assume, one can easily understand how an inordinate distension could rupture the external coat, before allowing any such lesion to occur in the internal coat. When the stomach is fully dilated normally, the mucous membrane is not strained in the least, chymification is uninterrupted; whereas, on the other hand, were the mucous membrane so dilated as to be tense, it would interfere with the secretion of the glands, and chymification would cease. Nature has been most beneficent in this, in allowing the animal to eat to the greatest desire, without materially interfering with digestion.

REPORTS OF CASES.

RHEUMATISM CAUSED BY FEEDING MILLET.

By F. H. FANNER, Vet. Student, Hillsboro, North Dak.

In the hope that the following cases may be of some interest to the readers of the REVIEW I have been induced to forward them for insertion. During the last three months, while practicing with Dr. B. C. Taylor, V.S., of this place, we have had the opportunity of observing rheumatism in its various forms. About the middle of last January our attention was called to four or five cases of rheumatism inside of one week. At that time the weather was fine and had been for some time previous, so we were obliged to look to something besides bad or wet weather, which is said to be the chief exciting cause of rheumatism. These cases had all occurred in good, dry, well-ventilated stables, but it was noticed that they all had been fed millet for some time and got no other hay or very little grain. New cases kept increasing, so much so, that by the last of March we had over one hundred cases on record. Most all these cases was characterized by pyrexia, sweats and acute shifting inflammation of the joint tendons and other structures.

Case I. On February 22d last I was called a distance of five miles to the farm of Mr. R. Standleys, to see a large bay gelding said to have got very bad on the road coming from town. After arriving at the place the owner informed me that some three or four of his horses had been affected with some peculiar trouble like rheumatism for some weeks; found bay horse standing in stall breathing fast, flanks tucked up, tenderness of the abdominal muscles, and could only move with great difficulty, pulse quick and hard, temperature 103°.

In the next stall was a bay mare with articular rheumatism in one hock joint. Next was a pony mare heavy in foal affected in both hock joints, which were very much swollen. This mare was so bad that they had her in slings; pulse accelerated and hard, temperature 102° F.

Gave bay horse 7 drachm ball; left 3 ii doses three times a day, also sodii salicy. 3 ii doses three times a day; left pot. nit. sodii salicy. equal parts for the other cases, to get a tablespoonful three times a day. These cases all recovered rapidly.

Case 2. A horse three years old suffering from acute rheumatism lying and able to move only when assisted; had been bad for about four days, pulse 66, hard, and temperature 104° F. tendons below knees and hocks very much swollen and sore to the touch. Gave a purgative and left nit. pat. $\mathfrak{z}4$ doses three times a day ex. colchicum fl. $\mathfrak{z}i$ doses every four hours. On the third day he began to improve and could stand in slings. Changed treatment to sodii salicy. $\mathfrak{z}ii$ doses three times a day. This case improved slowly, taking about three weeks before he could walk about.

Case 3. A blue bull chestnut mare nine years old, heavy with foal, afflicted with articular rheumatism in the left stifle joint; suffering much pain, could not bear a pound of weight on afflicted leg and would hold it up off the floor most of the time. Pulse quick and hard; temperature $102\frac{1}{2}^{\circ}$, respiration hurried. Treatment: gave e. bellad fl. and left nit. pot. $\mathfrak{z}ii$ three times daily; sodii salicy. given three times daily; applied an anodyne liniment on stifle joint. March 27, mare down not able to rise; put slings on and raised her up; appetite good, urine high colored. Applied blister to stifle joint, added to the above treatment ext. balchici $\mathfrak{z}ii$ three times a day. On March 29, not much improvement. Changed treatment to sodii hyposul. $\mathfrak{z}ss$ doses three times daily. March 30, she lost her foal and died a few days after herself.

Case 4. A bay gelding twelve years old taken very bad with muscular rheumatism, could only move with great difficulty. Muscles of the chest very sore when pressed upon, particularly the intercostal muscles, constituting pleuradynia. Muscles of right shoulder very much swollen, pulse 70, temperature $104\frac{1}{2}^{\circ}$ F. respiration hurried. Gave a laxative ali lini. Pat. nit. in $\mathfrak{z}ss$ three times daily E. colchici $\mathfrak{z}i$ doses every four hours, the third day changed treatment to sodii salicy $\mathfrak{z}ii$ three times a day. This case recovered rapidly with the exception of the right shoulder, which formed a large abscess.

Case 5. Admitted to barn in April 22, suffering from acute rheumatism. Could not bear to be touched and after standing a while could scarcely move at all. Pulse 72, temperature 104, respirations much increased. Gave ali lini $\mathfrak{z}ss$ E. bellad fl. $\mathfrak{z}ss$ also E. colchici fl. $\mathfrak{z}i$ every four hours. Next

day pulse 60, temperature 102°; changed treatment nit. pot. 3 ss sodii salicy 3 ii sodii hyposul 3 ss three times daily. Recovered slowly.

I communicate these few simple cases more to show you the line of treatment we have passed than to enlighten you on the pathology of the disease. However, there is no doubt in my mind but lactic or some other acid accumulates in the body, and the symptoms are directly referable to the action of this poison upon the system. Why millet should cause rheumatism, I will leave for some veterinarian to explain, but to confirm the fact that it does: 1st. Every case we have had had been fed millet for some time; 2nd, that farmers that had prairie hay and did not have any millet, did not have any rheumatism; and 3d, when stockmen found out that millet was injurious and stopped feeding it they did not have any more new cases.

RABIES IN THE HORSE.

W. H. DALRYMPLE, M.R.C.V.S.

Veterinarian, State Experiment Station, Baton Rouge, La.

The animal to which my attention was called on Friday last, the 1st of May, was an aged chestnut gelding and the symptoms presented were as follows, viz.: On my first examining him he exhibited trembling of the superficial muscles of the body: a jerky movement of the lips; stiffness about the throat with his nose kept slightly elevated; occasionally biting at his breast and sides, as if trying to bite an insect that was stinging him; the eyes clear, and expressing a good deal of excitability; the pulse quicker and more frequent than normal; was informed by the owner that the horse's bowels were very much constipated, and I prescribed a dose of laxative medicine, which was given, after some difficulty.

The following day, the foregoing symptoms were somewhat aggravated with the exception of the bowels, which had responded slightly to the action of the medicine. While tied to a tree in a lot at back of owner's house, the horse would at short intervals bite at his breast, at the trunk of the tree, then at some branches that overhung his head; he also

made frequent attempts to bite some hogs loose in the lot.

On visiting the animal on the third day, I found the point of each shoulder and the forelegs just above the knees, perfectly raw from his tearing and biting at the parts with his teeth; his thirst seemed great, but when water was offered, after swallowing two or three mouthfuls, spasm of the throat would take place and he would draw back from the bucket of water as if in dread of it; this, however, was simply the result of spasm, as he would again partake of a mouthful or two, which was again followed by a similar spasmodic action of the throat. During intervals of a few minutes each which gradually became shorter, the horse would stamp with his fore feet, then throw himself down violently and commence attacking his legs ferociously, just like a hungry dog worrying a bone, and during this attack his whole frame appeared to be under the influence of the spasm, and his urine seemed to be passed involuntarily. After a few seconds and evidently with some difficulty he would regain his feet, commence nibbling grass for a minute or two, but apparently unable to swallow; then a return of the former symptoms would take place, only in a more aggravated form, and in more rapid succession, with a flow of saliva from the mouth. The symptoms became more intensified until the horse became paralyzed, was unable to rise and died that evening.

I have been informed that some dog or dogs in the neighborhood, suspected of being "rabid," have been destroyed, and as this horse was turned out on the commons, when not at work, it is quite probable he may have been bitten by a rabid dog. I had no opportunity of making a post-mortem.

AMERICAN VETERINARY COLLEGE.

HOSPITAL DEPARTMENT.

SUPPURATIVE NEPHRITIS—SEQUELÆ OF INFLUENZA.

BY DR. E. NESBIT, D.V.S., HOUSE SURGEON.

This case is more likely to prove interesting to a practitioner of lengthy standing than to one who, like myself, has but recently entered upon practice.

The readers of the REVIEW will, we hope, accept this report

without subjecting it to too critical an examination, in view of its object, that of furnishing an interesting addition to our pathology. The case under review is that of a chestnut mare, six years old, used for light road work. When first coming under our notice she was suffering with pleuro-pneumonia, from which she apparently thoroughly recovered under the ordinary classical mode of treatment. She soon after became sick again, with what appeared to be at first a simple case of sore throat, but which developed into a well marked case of influenza, which soon assumed a typhoid character. The temperature rose and fell, varying three or four-fifths between 101° and 102° ; the pulse varying also from 48 to 60, though still fairly strong; and respiration was somewhat accelerated. Her appetite was fair, eating from four to six quarts of food daily, and the bowels moving quite naturally, though in a few instances slightly diarrhetic. The loins were flexible, though not to an extreme degree, and she moved freely in her stall, lying down comfortably and rising easily, with no cough or pain. She remained in this condition for some time, without any apparent change, irrespective of what treatment was pursued, and quinine, anti-pyrine, alcoholic stimulants, and milk seemed to be equally without effect.

Suspecting that her typhoid condition might be due to some of the circumstances of her surroundings, she was placed in the ambulance and carried to the hospital.

She here maintained about the same condition as at the commencement of her sickness, though she had lost both flesh and strength, and her appetite still continued to be good.

One morning it was noticed that her hocks were swollen, and that she was very stiff behind, and suspecting rheumatic trouble, salicilate of sodæ was prescribed, and partially relieved her, but never entirely. The inguinal regions also were somewhat œdematous, with perhaps a somewhat increased soreness on pressure of the loins, but withal, the same exhibition of general symptoms, and the comparatively regular execution of all the vital functions, a slight increase in the quantity of urine being, however, observed. She continued in this way, steadily losing ground, notwithstanding all our efforts, until one morning she was found to be unable to move in her

stall. Her hind legs were greatly swollen; and, in turning round, her feet became entangled in the stall, and she fell down. Made comfortable as well as possible, she was left in that position with some hope that she might be improved by the rest. But when called upon to get up she was found to be utterly unable to do so, and, notwithstanding all efforts made to assist her, she died during the night.

The post-mortem proved to be one of much interest. All the organs of the body were anæmic, and all the muscles were pale. The lungs and the pleural membranes were healthy; the pericardial sac contained about two and one-half ounces of serosity; and the heart was hypertrophied; probably a "compensatory hypertrophy," the walls of the ventricles being very much thickened. The cavities of the heart contained large ante-mortem clots, as did also many arteries of the body, these clots varying in size in the different arteries, the renal being entirely clogged, and the most minute subdivisions of the blood vessels in the substance of the kidneys were also entirely filled. The kidneys also presented other most interesting lesions, both being much enlarged, the left weighing fifty-seven and one quarter, and the right forty-four and one-half ounces. These organs also presented great abnormality in their dimensions, the left being nine inches in its long axis and seven in its width, and the right measuring eight inches in length by six in width. The cellular tissue surrounding them was very much congested, together with the capsules of the organs. The left was irregularly lobulated on its great circumference, and a section of the substance showed numerous patches of congested and inflamed tissue, including six isolated abscesses, containing from one-half to one drachm of pus. The right kidney contained no abscesses, but was much congested and inflamed in patches. The bladder was in a normal condition, and contained about one pint of urine, which was neutral in reaction and contained much mucus and some sugar. All the other organs proved healthy. Microscopic examination of the tissues of the organ was not made.

FATAL INDIGESTION IN A DOG.

BY THE SAME.

The subject of this report is a water spaniel, about three years of age. He was, apparently, in perfect health one night, and on the following morning was found dead. The suddenness of the death and the apparent good health of the animal immediately previous excited the curiosity of the owner, and the cadaver was sent to the hospital to undergo a post-mortem in order to discover the cause of death.

In making the examination I found a congested condition of the stomach, and packed in the organ a disgusting mass that would weigh from six to seven ounces, while beyond the stomach the alimentary canal was in a normal condition, excepting that near the rectum there was a portion from two and one-half to three inches in length that was spasmodically contracted.

In different parts of the intestinal tract were *large pieces of bone, and pieces of coal*, in the same course. The liver presented a normal condition, as also did the gall bladder. The spleen was normal in appearance. The pancreas were slightly congested, as were also the kidneys. The lungs were normal and the heart was in the same condition. The lesions noticed do not justify a positive conclusion as to the cause of death. The probabilities are that it was caused by indigestion, because of the congested condition of the stomach, and the offensive mass found in that organ, together with the large pieces of bone and coal, or grit, found in the posterior portion of the alimentary canal.

DANGER OF BAD CHLORAL BALLING—SERIOUS GLOSSITIS AND STOMATITIS ITS RESULTS—EXCELLENT EFFECTS OF PEROXIDE OF HYDROGEN.

BY DR. E. ACKERMAN, D.V.S., HOUSE SURGEON.

The patient was a large gray gelding, seven years old, owned by Barnum & Bailey. He was taken sick during one night, and as the ordinary medical attendant of the stables could not be reached, the watchman of the stable called upon one of a large horse dealer close by, who attempted to administer a chloral ball, which he broke in the horse's mouth, without afterward washing it out.

When we saw the patient the next morning, the tongue was hanging out of the mouth; there was a profuse salivation, and the animal was unable to eat. The appearance of the mouth showed that the horse had chewed the chloral. The gums around the molar teeth, the mucous membrane of the cheeks and tongue, especially on the left side, as well as the gum around the lower incisors, were horribly burned, the epithelium was sloughing off by large patches, and the mouth, lips, and cheeks were very much swollen. His temperature was up to $104\frac{1}{2}^{\circ}$. A sling was advised for the tongue, to be placed in the mouth, and cold, astringent gargles of honey, vinegar and water to be applied as often as possible.

This was continued for a day or two, when the man in charge removed the sling and allowed the tongue to hang out, as he said, to let the horse put his tongue in the cold water. This was bad practise, as the horse held his tongue always between his incisors, biting it, and cutting off the circulation to an extent which endangered the sloughing of the anterior portion of the organ. The slings were immediately re-applied and the patient ordered to the hospital, where he entered the same day, April 22. The horse then had a temperature of 101° , the mouth and tongue were very much swollen, and very raw, the gums being extensively ulcerated at the base of the incisors and molars; and a *very fætid odor* and *profuse, thick, repulsive* discharge of saliva escaped from the mouth. The horse was totally unable to eat anything, whether soft or even liquid food. The mouth was then gargled with a three per cent. solution of creolin, and swabbed thoroughly with a ten per cent. solution of peroxide of hydrogen. On the 23d there was no change, the fætid odor being still very much marked, and the mouth so sore on the left side that the patient would not allow it to be touched. The mouth was syringed again with creolin, when large pieces of sloughing membrane came away. The buccal cavity was then *sprayed* with a thirty per cent. solution of peroxide, renewed three times a day. For the first time the animal partook, though with great difficulty, of some green grass.

On the 24th the temperature was normal; the smell of the mouth had greatly subsided; the wounds of the mouth looked

better; the saliva was still abundant. The same treatment was continued. On the following day the strength of the peroxide solution was raised to forty per cent., and then sprayed in the mouth. From this time forward everything assumed a better aspect. The smell of the mouth had all disappeared; the sloughs were all thrown off; the wounds became of a more healthy aspect; the edges showed the formation of the new layer of epithelium; the saliva was less abundant, and the animal began to eat. The rapidity with which the peroxide acted in this case was surprising, the improvement being more and more perceptible after every application of the H_2O_2 . The horse was discharged on the 3d of May, if not entirely recovered, at least rapidly on the way toward complete restoration to health.

Evidently in this case H_2O_2 has proved the best medicinal agent for trouble of this kind, and for any foul-smelling ulcers of the mouth. It destroys the odor at once, and imparts a healthy appearance right from the start, if sprayed on immediately after the wound has been thoroughly cleaned.

CARELESSNESS IN DIAGNOSIS.

BY THE SAME.

There is nothing of great interest in this case, beyond the hint which it conveys of the importance of care and correctness in diagnosis.

The patient was a small lap dog, brought to the hospital with the history that, though treated for three days by a prominent city veterinarian, he still would not eat, and was constantly salivating. The owner did not know what name the veterinarian had given the complaint at his first visit when he first saw the dog, but on the second day afterwards he told the owner the dog had a severe sore throat, and gave her a liniment to apply externally, with a prescription to administer internally.

On examining him, I failed entirely to discover any symptoms of sore throat. But I found the breath very foetid, with continual salivation, and the tongue hanging out of the mouth, and the owner said the animal had rapidly emaciated, and had

not eaten for the last three days. Looking for a cause for the bad breath and protruding tongue, I examined the teeth and found them all right, but looking further back in the mouth I discovered a piece of sharp bone, about an inch long, with a sharp fang, which had become implanted in the gum just behind the left last molar, and was lodged directly across the mouth, just over and behind the base of the tongue. This was extracted without any difficulty, and the little animal immediately relieved of his "traumatic difficulty of deglutition."

EXTRACTS FROM FOREIGN JOURNALS.

PILOCARPINE IN INDIGESTION OF SOLIPEDS.

BY MR. CADIX.

The author was twice called, on different occasions, to attend horses suffering with all the symptoms of gastric and intestinal indigestion, and had applied the ordinary forms of treatment by ether, sulphate of sodæ, acetate of ammonia, stimulating teas, etc., without gaining any advantage. Finding his patients getting worse, he then had recourse to eserine, which he injected under the skin in doses of ten centigrams, but still without obtaining the slightest improvement.

Having then decided to use the acetate of pilocarpine, he injected subcutaneously ten centigrams of it in ten grams of distilled water. The result of this was extremely satisfactory, the ptyalism, which is the first effect produced by the administration of the drug, being almost immediately followed by the dropping of fæces, and in a short time the two patients were looking for their feed.

In a third and similar case, taking advantage of his experience with the two previous patients, he again employed the same remedy, and had the satisfaction of relieving his patient in about an hour. The conclusions of the author are, first: acetate of pilocarpine has a surprising effect in the treatment of indigestion in horses; second, it is generally superior to all stimulating drenches, and even to sulphate of eserine; and third, it is entitled to take precedence among known remedies in cases like those referred to, in common practice.—*Rec. de Med. Vet.*

INDIGESTION AND INTESTINAL OBSTRUCTION RELIEVED BY
PILOCARPINE.

BY MR. P. WALDTEUFEL.

The patient was a strong and healthy horse, aged nine years. He had been suffering with indigestion for twelve hours, and notwithstanding the various forms of treatment which had been applied, was getting worse, his condition being such that the owner had decided to have him killed and prepared for the butcher.

The author, desiring to make some experiments with pilocarpine, and to watch the sedative effects of the drug, gave him a subcutaneous injection of one gram of a one-fortieth solution of nitrate of pilocarpine, followed by a second twenty minutes later. Being obliged to suspend the experiment for the time, by the pressure of other business, he returned some six hours later, expecting to find the patient in the last extremity. The animal was then lying down, with an extremely weak pulse, the mucous membranes pale, the abdomen extremely tympanitic, and the head continually turned toward the flank. There had been no passage from the bowels, and had been occasionally violent struggling. Three successive injections, similar to those previously administered, were immediately given. Fifteen minutes later an abundant salivation appeared, and the animal seemed to be quieter. His body was covered with perspiration, and his pulse was stronger, and, after half an hour, gasses began to be expelled by the anus. In the presence of this comparative improvement, the patient was, after receiving a rectal injection of mustard water, made comfortable for the night. The next morning the animal was found standing up, and ready to eat his breakfast. During the night he discharged an enormous mass of hard fæces, which stood piled in a heap behind him.

The three grams of the one-fortieth solution had done the work, first, by quieting the pain, through its sedative effect, and then by giving rise to a hypersecretion of the entire glandular system of the digestive canal, which, by lubricating the mucous membrane, had produced the softening and stimulated the expulsion of the excrementitial mass originally causing the obstruction.

Two similar cases are also recorded by Mr. Chauvain, with similar results and rapid recovery.—*Ibid.*

PERFORATION OF THE DUODENUM BY A PIECE OF WOOD.

BY MR. MOLLEREAU.

This case is quite unique in respect to the cause which gave rise to the lesion which carried off the patient.

A mare kept in a stable between two horses which were suffering with typhoid fever (abdominal influenza) was one day found ailing, and presenting some slight symptoms of colic, with a dull appearance, and in a state of complete anorexia. Examination of her condition resulted in a diagnosis of pleurisy, which was suggested by the condition of the respiration, and by the signs revealed by auscultation and percussion, the pulse, besides these, being hard and full, and temperature 40°C. Treated accordingly, principally by injections of morphine, for the relief of the abdominal pains, the mare, however, died about forty-eight hours after the attack.

At the post-mortem examination the thoracic cavity was found to be healthy, but on exploring the abdomen lesions of extensive and acute peritonitis were exposed, with abundant effusion and extensive false membranes of recent formation. In searching for the cause of this peritonitis, the author found on the duodenum, at its great curvature, about opposite the opening of the ductus communis choledocus, a small fragment of wood, about twice the thickness and size of a match, being about ten inches long, with blunt ends, and somewhat flexible, engaged through an opening which it had perforated, and through which intestinal liquids had escaped, and thus given rise to the fatal inflammation. It is quite surprising that with its pliable condition, this splinter of wood had not broken in pressing against the wall of the intestine which it had perforated.—*Ibid.*

A CASE OF DIFFICULT PARTURITION.

BY MR. GRÜN.

The patient was a mare in labor. She was eighteen years old, and had had several deliveries without trouble. This time, when the contractions occurred, the extremities of the

fore legs of the foetus appeared through the vulva, but the head remained invisible. Introducing the hand, the operator could feel a round, hard mass, formed by the neck, bent backward, and a little further the ears and the cranium could be touched. The nose could be seized by pushing back the foetus, but the head could not be placed in good position, though the foetus seemed to be small, and there was plenty of room for its passage. There was evidently a pathological deviation of the cervical vertebræ. The neck was secured with a cord, and strong traction being applied, one of the vertebræ was fractured and the foetus readily extracted. The operation was through in about fifteen minutes. While the author was cleaning his hands he was hurriedly called back to the animal, which, by violent efforts had caused a prolapsus of the uterus. It was returned in place immediately, but the contractions returned more powerfully, and it seemed an impossibility to keep the organ in place, though the surgeon with his whole arm in the vagina and assisted by a man pressing against his shoulder, tried to resist the exit of the organ. The mare being prevented from lying down, the uterus was then plugged and packed with a large quantity of wet rags. This condition lasted for nearly an hour and a half, after which the contractions diminished gradually, and finally ceased. The removal of the rags was then effected, and after a few hours the os uteri began to contract, and the uterus was soon closely cleaned out. Though the author expected a fatal metritis as the result, the mare, a few hours after, was entirely well and eating. Since then she has again been delivered, without accident.—*Wochenschrift für Theirheilkunde*.

TORSION OF THE UTERUS IN THE COW.

BY THE SAME.

The author believes that in cases of this nature, it is useless to lose time in studying the direction of the torsion, and considering whether the animal is to be rolled to the right or to the left. He prefers the method of Goring, described by Franck: "The torsion being seldom sufficiently considerable to prevent the feeling of the envelopes, at least with one finger, they can be immediately emptied of their contents. This

is not always easy, and the membranes often escape the puncture by the finger. In this case, one must watch for a violent expulsive effort of the animal, which, by the pressure it produces, increases their resisting power and permits them to be more readily lacerated. The foetus is, at that time, soon pushed back, in such a way that any part of it can be taken hold of, as, for example, a foot, and drawn back through the os. Reduced in size by the escape of its contents, the uterus can no longer maintain the motion of torsion. On the contrary, the twist diminishes to such an extent that the head and the other leg are easily secured. At that moment it is important to raise the hinder parts of the animal, and to increase the spiral formed by the uterine mass by a powerful extension of the arm which holds the foetus. The animal, being on her back while she is down, is then turned slowly from left to right, and from right to left, until a favorable position is obtained to extract the foetus.

The lacerations which may take place heal readily by the use of creolin.

Goring adds that "it is useless to speak of embryotomy, which plays a greater part in theory than in practice."

The author states that he has not performed embryotomy for years, but advises beginners to practise it rather than to use their strength in vain efforts. Embryotomy is an excellent exercise, and develops the manual dexterity of young veterinarians, but the practitioner who knows how to take advantage of the dimensions of a pelvis will think but little of it.—*Ibid.*

BIBLIOGRAPHY.

TRAITE DE ZOOTECHNIE GENERALE.—(Treatise of General Zootechny.)
By PROR., CH. CORNEVIN. Paris. J. B. Balliere & Son.

Some years ago, during one of our trips to Europe, while visiting our beloved master, H. Bouley, and referring to our own humble efforts in behalf of our profession in the United States, he said to us: "You commit a great error if you fail to teach zootechny in your American schools. Zootechny progresses rapidly, and the day will soon come when the edu-

cation of a veterinarian who has not cultivated an acquaintance with that important branch of our specialty will be looked upon as but partial and incomplete."

What rapid progress has not this science made since those days, and how different the opportunities for its study now, from those of the days when only the excellent work of Professor A. Samson was accessible to the student? And what a stride it is, from the state of things of that day to the publication of this large work of Professor Cornevin! We do not know that any book of equal value can be found in any other language, but we feel confident that a translation of the *Trait de Zootechnie Generale* will become immediately imperative, and that, until then, the treasures that are to be found in its pages will remain lost to a host of those who are interested in the breeding and training of domestic animals, and the profit to be found in it. With this guide and help breeders may learn many of the valuable truths which the close observations of Professor Cornevin has so skilfully developed and registered in his book, and by its help the veterinary student and practitioner cannot fail to acquire an augmented stock of knowledge, fuller and truer than can be elsewhere obtained in the matters concerning which they are so often consulted, and in which it will be considered a shame if they are found deficient, and fail to answer intelligently and wisely the questions they will be asked. The space which we are able to give to the work of Professor Cornevin, we regret to say, will not allow of a general review. A critical notice, if such a thing were possible, would require to do it justice a special amount of technical knowledge and cyclopedic information of which we regret to say we are not the possessor. But, we can, without hesitation, say that the scheme and execution of the book has proved it to be an excellent contribution to veterinary literature. It is full of personal observations and rules in new theories and original ideas, propounded by one who has already earned and obtained in the scientific world, by the scope of his researches and possession of previous labors, a well-merited fame.

The book is divided into four principal chapters, treating in the first on domestic animals in the past and in the present ;

in the second, of individuals and groups; third, zootechnic processes; fourth, zootechnic undertakings.

Each chapter treats its subject in the most thorough manner, and together they form a corpulent volume of nearly 1,000 pages, handsomely illustrated with beautifully colored plates, besides more than 200 wood cuts. It is published by Baillière & Sons, and is, of course, well printed, and offered to the readers in that same handsome style which has for years past characterized the issues of this old publishing house.

NOUVEAU DICTIONNAIRE PRATIQUE DE MEDECINE, CHIRURGIE ET HYGIENE VETERINAIRES.—(New Practical Dictionary of Veterinary Medicine, Surgery and Hygiene.)—Begun by H. BOULEY and continued by A. SANSON, L. TRASBOT and ED. NOCARD.—Vol. XIX. Asselin & Houzeau: Paris.

Another addition to that extensive encyclopædia—and one which will do credit to its authors, viz., Professors Trasbot, Railliet, Nocard, Moussu and Kaufman, of Alfort; Cadeac and Peuch, of Lyons; Labat, of Toulouse, and Sanson, of Grignon. The following subjects are treated in this new volume: Rheumatism; Revulsives; Rubefaction; (Counter Irritation); The Rectum and its Diseases; Repercussion; Resolution; Resorption; Retention; The Kidneys, their anatomy, physiology and pathology; Rouget of Swine; Retivity; Phlebotomy; Parasites of the Kidneys and of the Respiratory Tracts; Nutritive Relation; Military Remounts; Reproduction; Reversion; Hoofs, etc., all of which are covered in the 564 pages of a plainly printed, but easily read volume.

VETERINARY POST-MORTEM EXAMINATIONS. By A. W. CLEMENT, V.S. (Sabiston and Murray, 916 6th Ave., N. Y.)

Some time ago we published from the pen of Dr. A. W. Clement, an extra of this little volume, which is now presented in its new and complete form. In the 64 pages before us some excellent advice is presented, and some valuable directions given in respect to the manner in which post-mortem examinations ought to be made in order to derive all the benefits that can be obtained by this mode of reading the book of cad-

averic pathology. We have on previous occasions promised good success to the author and ready sales to the publishers, and we are pleased to find that our prognosis promises to be well fulfilled, and that the exhaustion of the edition recently issued will soon necessitate a renewal of the work of the pressmen and binders.

PATHOLOGIE AND THERAPEUTIQUE SPECIALES DES ANIMAUX DOMESTIQUES, (Special Pathology and Therapeutic of the Domestic Animals) by DR. FRIEDBERGER and FROHNER—(French translation by PROF. CADIOT and J. N. RIES, with annotations of Director Trasbot.) Asselin and Houzeau : Paris.

The second part of the first volume of this work has just reached us. Its topics are diseases of the urinary, the genital and the circulatory systems, and the diseases of the skin.

ELECTRICITY, its application in medicine, by WELLINGTON ADAMS, M.D. Geo. S. Davis, Detroit.

Two nice little volumes of the series of the "Bijou Library," initiating the reader into an interesting and important branch of therapeutics. They are well written as to text, neatly printed as to typography: agreeable reading as to the subject; and must form a valuable contribution to the great science of therapeutics. They cannot fail to be a valuable addition to the library of the veterinarian and the physician.

PROGRESS OF HIPPOPHAGY. By CHAS. MORST.

PRIVILEGES OF VETERINARIANS. By L. GARNIER.

Two pamphlets of valuable interest to those concerned in the subjects treated.

OBITUARY.

WILLIAM DICKSON, V.S.

A TRIBUTE TO A DEAD FRIEND.—Recently elected assistant-chief of the Bureau of Animal Industry at Washington, D. C., William Dickson died suddenly on May 11, 1891.

"De mortibus nil nisi heue," true as it is, is not, however, the impulse for the following words to the profession. It is rather the exceptional case which this admirable man presented, that asks for a comment from one who knew him well.

He was a non-graduate of veterinary medicine, and he said so ; but he was a man of superior education, of great common sense and original thought, and he impressed so at once. I met him first in a farmers' institute in Minnesota, answering questions on veterinary science. The promptness, ease, and simplicity with which he disposed of questions which would have puzzled many men full of college-wisdom, astonished me, and he had my sympathy right there. We afterwards spent together many hours in discussion of professional subjects, and although he was modest in his opinion of matters of a purely scientific nature, I, nevertheless, found him infinitely better posted than several veterinarians who boast of their diplomas.

Whatever may be thought of his call to this place in Washington, he was certainly eminently fitted for the particular work he seems to have been chosen, and he would have made a brilliant record.

I mourn in him the loss of a friend whom I dearly loved, and the profession to which *he* more justly belonged than others, loses a member of exceptional talent and rare gifts.

SCHWARTZKOPF.

LEMUEL C. CAMPBELL, D.V.S.

We have just received the sad news of the death of this young and promising veterinarian, which took place on the 20th of May. He was a kind, genial man, who though but recently in practice had already created for himself a large number of friends and patients. Dr. L. C. Campbell graduated at the American Veterinary College, class of 1883.

SOCIETY MEETINGS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Keystone Veterinary Medical Association was called to order at 8:30 P.M., Dr. W. H. Hoskins in the chair. The following answered roll call : Drs. Werntz, Weber, Webster, Hoskins, Sellers, Goentner, Kooker, Lentz and Drake.

The minutes of previous meeting were read and adopted. Dr. Hoskins, Chairman of the Legislative Committee, said the work was being carried on without much success. Dr. Schreiber failed to appear to read his paper on the subject of "Milk Inspection of Philadelphia."

Dr. Sellers said milk and meat inspection should be more rigid in New Jersey as well as in Philadelphia; as he had seen cattle in Camden that come over to Philadelphia to be slaughtered and the meat used in the manufacture of bologna sausage, that were in a tuberculous condition and not fit for food.

Dr. Werntz says lots of diseased meat is brought in from surrounding dairy farms and sold in our markets. We should have a law against it and the law should be enforced. He was one to introduce a bill before the Legislature, in which a veal must be twenty days old and weighing no less than sixty pounds before being placed upon the market for food. He says he has seen cattle too sick to walk, brought in after dark, slaughtered and put on our markets.

Dr. Weber says he can drink milk in Philadelphia with perfect safety, due to the present milk inspection of the city. He stated that the officials are examining different samples of milk under the microscope at the Public Buildings for the Koch bacillus.

Dr. Goentner said Dr. Weber refused to drink milk at Lancaster when he was there as his guest. Dr. Weber replied that he did not drink it yet when at home in Lancaster.

Dr. Goentner asks, has the tuberculous bacillus been found in milk? Dr. Hoskins answers yes. It has been found in milk without any lesion of the gland being detected. Dr. Kooker thinks milk inspection as it is now being carried on, matters little to the veterinarian. Trying to find the bacillus in milk is not a preventative, but simply a scientific investigation; that the Keystone Veterinary Medical Association and State should do more to forward the matter, and that we should have a set of resolutions up before the next Legislature, in which the inspection should take place at the farm. He thinks every practitioner should have his local district and be paid for the same; the inspections to take place at certain periods of time. To get these resolutions passed, we should go in a body, physicians, Board of Health, and veterinarians.

He wants resolutions passed to express to the public the views of the Keystone Veterinary Medical Association.

He, as Secretary of the State Association, has appointed Dr. Hoskins to read a paper at the next meeting on the subject of "Milk and Meat Inspection."

Dr. Sellers thinks water the least harmful of any of the constituents of milk. Dr. Doremus in his lectures says, test for sugar, as the sugar seldom varies; the solids vary, and the water can be detected. Dr. Weber thinks there should be better hygienic inspection.

Dr. Hoskins thinks the inspection is clearly from a commercial standpoint. Coloring matter was used; also said to keep it sweet. The present inspection is good, but deficient in regard to milk. The work should be carried further, put in resolutions, the medical journals, newspapers, etc.

Dr. Kooker suggests the President appoint a committee to draw up a set of resolutions, giving views of this Association. Moved and seconded. Carried.

The President appointed Dr. Huidekoper, Chairman: Drs. Werntz, Weber, Goentner and Kooker.

Dr. Hoskins cited a case of a green western horse suffering with influenza, having his tail tied up very tight. The tail swelled to an enormous size, which was followed by twenty-three distinct abscesses and a slough at the end, with a complete relaxation of the sphincter ani, semi membranosis and semi tendinosis muscles, great lameness following, hardly able to stand, weak pulse, high temperature. Is now convalescing, and has a new growth of hair covering the tail.

He spoke of a case where no diagnosis was given. A large bunch or swelling appeared on the line of the tarsis and metarsis in one night, very painful on pressure, with excessive lameness; was treated two weeks, and, to all appearances, was perfectly sound. With slow driving she drove sound. On speeding she was again thrown into the same condition as at first. The same treatment brought the repetition as above.

Dr. Goentner spoke of a filly having a temperature of 104°, respiration 32, regurgitation of the jugular vein. Diagnosis, endocarditis. After three weeks treatment is still in the same condition, with a small amount of pneumonia in the right lung.

Dr. Weber said it was pleurisy in the second stage.

The Vice President's position being empty by the resignation of Dr. Ridge, Dr. Werntz was nominated. It was moved and seconded he be elected by acclamation, the chair to cast the vote. Carried.

The meeting then adjourned.

W. H. HOSKINS,
President.

M. W. DRAKE,
Secretary.

SOUTHERN VETERINARY MEDICAL ASSOCIATION.

The first meeting of the Southern Veterinary Medical Association will be held at Linck's Hotel, Nashville, Tenn., on July 4th.

Respectfully yours,
E. R. FORBES.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The members of the United States Veterinary Medical Association and the profession in general are given notice that the Trunk Line Association and Southern Passenger Association have agreed to concede to all members attending the convention at Washington, Sept. 15th to 17th, 1891, the $1\frac{1}{3}$ rates of fare from all points in their districts.

This meeting will afford interest of a rich character to every member of the profession. The subject of Food Inspection and Animal Diseases, with special reference to their importance to man, will receive at this meeting the most thorough consideration ever given by our Association. The present era in sanitary science and laws throughout the civilized world give additional interest to these subjects at this time.

Dr. C. C. Lyford of Minnesota will read a paper on "Barren Mares." This subject, of so much interest to those members residing in breeding districts, will be an additional incentive. Other papers have been promised the committee of arrangements and will be announced at a later date.

The eastern and central members of the Association are most earnestly requested to be in attendance at this meeting to greet the large delegation of Western members and to complete more fully the thorough amalgamation of the entire profession. The memories of the grand meeting in Chicago should be reviewed at Washington, and a hearty welcome should be extended to those who did so much to make our trip to the West so profitable and pleasant.

W. HORACE HOSKINS, *Secretary.*

12 So. 37TH ST., PHILADELPHIA, PA.

OHIO AND MICHIGAN VETERINARY ASSOCIATION.

A joint session of the Veterinary Associations of the States of Ohio and Michigan will be held in Abstract Hall, in the City of Detroit, on the evening of July 22d and the following day.

An excellent programme is being prepared, and all are cordially invited to meet with us.

WM. H. GRIBBLE, Sec. Ohio State Association.

COLLEGE COMMENCEMENT.

ONTARIO VETERINARY COLLEGE.

On March 28th, the exercises of the sessions 1890-'91 were closed at this institution, and the following gentlemen graduated:

Alexander, John E.....	Masconchie Rapids, P. Q.
Anewalt, M. W.....	Pleasant Hill, Ohio.
Appleyard, Edward.....	Grand Valley.
Augustin, David T.....	Calton.
Barnes, Frank M.....	St. Thomas.
Barr, J. W.....	Milverton.
Batchelder, H. M.....	Warrensburgh, Ill.
Belaire, G. H.....	Pembroke.
Boothby, Jas. T.....	Altona, Ont.
Bowen, Hamilton.....	North Fairfield, Ohio.
Bowlby, Percival T.....	Port Dover.
Brossman, C. W.....	Lower Heidelberg, Penn.
Brown, Alexander H.....	Pipestone, Minn.
Brown, Bruce E.....	St. Catharines.
Brown, Wm. A.....	Pipestone, Minn.
Bryan, Robert W.....	Lexington, Ky.
Burdick, Wm. M.....	Gravesend, Ont.
Burkholder, S. G.....	Denver, Penn.
Burkholder, Samuel.....	Viriden, Man.
Burneson, James C.....	Mansfield, Ohio.
Crowfohr, Anderson.....	Brampton.
Callender, E. H.....	Kirkton, Ont.
Carl, Lewis W.....	Campchase, Ohio.
Carnes, Will E.....	Greenwood, Ind.
Claussen, William R.....	Waupaca, Wis.
Clevenger, Walter E.....	Union City, Indiana.
Cobleigh, E. J.....	Parkhill, Ind.
Collins, S. J.....	Green River, Ont.
Connolly, Vilroy M.....	Owatonna, Minn.
Corlis, Wilson S.....	Carthage, N. Y.
Crawford, Eli M.....	Brampton.
Creamer, John P.....	Regina.
Crewe, Wilton F.....	Hillsboro, North Dakota.
Cunnington, W. J.....	Parkhill, Ont.
Cole, Louis M.....	Toledo, Ohio.
Drury, James.....	Toronto.
Dunn, Lewis J.....	Erie, Penn.
Dietz, Joseph H.....	Owatonna, Minn.
Edmonds, Charles E.....	Fingal, Ont.
Everist, James Cicero.....	Arkona, Ont.
Findlay, Alex.....	Toronto.
Fitzgerald, George M.....	Chiselhurst, Ont.
Foster, J. E.....	Mt. Eaton, Ohio.
Frank, Albert A.....	Great Valley, N. Y.
Freed, Byron M.....	Sharon, Pa.
Genung, John A.....	Slaterville Springs, N. Y.
Gibb, James Mitchell.....	Kingston, Jamaica.
Gillies, Duncan R.....	Moffatt, Ont.
Gray, Whitfield.....	Newton, N. Y.
Galbraith, W. C.....	Brampton.
Hackett, Charles H.....	Linwood, Ont.
Hagesman, John M.....	Lynedoch, Ont.
Hanawalt D. C.....	Frankfort, Ohio.
Hanisch, J. A.....	Lake City, Minn.
Holgius, J. E.....	Mooreville, Ont.
Holmes, Ernest Burwell.....	London, England.
Honan, J. H.....	Delphi, Ind.
Hopkins, Arthur Geo.....	London, England.
Harrison Richard.....	Bad Ax, Mich.
Jobson, John A.....	Franklin, Penn.

Johnston, Herbert J.....	Jasper, Ont.
Johnston, Joseph B.....	Gallipolis, Ohio.
Kane, Elisha K.....	Warren, Ill.
Kaul, William.....	St. Mary's, Penn.
Keeler, Allen Z.....	Harleysville, Penn.
Kelley, James S.....	Irvine, Ill.
Kelley, Robert L.....	Irvine, Ill.
Kershner, Peter I.....	Bernville, Penn.
King, Joseph E.....	Palmyra, Ill.
Kinter, Joseph Brady.....	Marion Centre, Pa.
Klotz, J. W.....	Arcadia, Ind.
Kyle, Foster J.....	Cedarville, Ohio.
Lamberson, A. F.....	Whitehall, Wis.
Langford, D. E.....	Mason City, Iowa.
Lyon, Henry C.....	Grandon, Dakota.
Lewis, David.....	Omeme.
McClellan, Clarence.....	Greenwood, Ind.
McCurdy, Wm. Burton.....	Hutchison, Kansas.
McLoughry, R. A.....	Wolseley, N. W. T.
McLaren, W. H.....	Fargo, North Dakota.
Macdonald, Robert.....	Emerson, Man.
Machan, Alex.....	Mitchell, Ont.
Marsack, H. L.....	Tunbridge Wells, England.
Moore, George W.....	Burgessville, Ont.
Morrison, Andrew Smith.....	Bristol, P. Q.
Morrissey, Thomas.....	De Witt, Iowa.
Mountford, John Joseph.....	Blenheim, Ont.
Moyer, W. H.....	Pottsville, Pa.
Manley, H. M.....	Arkansas City, Kansas.
Neale, Geo. C.....	Parkhill, Ont.
Neilson, W. G.....	Battleford, N. W. T.
Nixon, W. A.....	Brampton.
Ovens, Hurbert A.....	Maple Lodge, Ont.
Piatt, D. Augustus.....	Lexington, Ky.
Palmer, Charles F.....	Wooster, Ohio.
Parker, A. L.....	Providence, R. I.
Parslow, J. G.....	Clarinda, Iowa.
Pendergast, Jas. A.....	Phoenix, N. Y.
Porter, Edmond C.....	Waterford, Penn.
Potteiger, Albert R.....	Bermville, Penn.
Price, J. O. F.....	Sibley, Iowa.
Pullen, Wm. H.....	Lebanon, Ohio.
Rhodes, Jackson.....	Uxbridge, Ont.
Rich, Theodore S.....	Avon, N. Y.
Robb, George.....	London, Ont.
Robinson, Ralph B.....	Brooklin, Ont.
Rollins, John W.....	Lancaster, South Carolina.
Robinson, Nathaniel.....	Dresden, Ont.
Ronan, J. L.....	Auburn, N. Y.
Sanson, Alexander.....	Petrolea.
Shadwell, W. H.....	Burgess Hill, Sussex, England.
Shain, Charles.....	London, Ont.
Shirley, Victor W.....	Waterford, Ont.
Sisson, Septimus.....	Manhattan, Kansas.
Smith, Alexander Esdale.....	New Perth, P. E. I.
Smith, Richard H.....	St. Mary's.
Stinson, W. Spence.....	Orangeville.
Storey, Mark A.....	Princeton, Ill.
Sowers, John B.....	Greencastle Penn.
Taylor, William R.....	Winnepeg.

Thacker, Thos.....	Portage du Fort, P. Q.
Teeple, Sherman L.....	Napoleon, Ohio.
Thompson, Joseph A.....	Elginfield, Ont.
Thompson, Samuel.....	Roseneath, Ont.
Tolmie, S. F.....	Victoria, B. C.
Turner, W. George.....	Pt. Edward.
Thompson, Joshua P.....	Upper Grove, Ont.
Tilt, Fred.....	Brampton.
Vanderslice, Delo.....	Salem, Ohio.
Vliet, George B.....	Hackettstown, N. J.
Vulliamy, Hugh F.....	Ipswich, England.
Walsh, Ernest J.....	Oakville.
Ward, U. E.....	Overton, Neb.
Wadsworth, W. J.....	Murray, Ont.
Wilson, A. M.....	St. Mary's.
Williams, Joseph E.....	Fingal, Ont.

CORRESPONDENCE.

A CORRECTION.

My attention has been called to a statement appearing in the report of the Keystone Veterinary Medical Association (AMERICAN VETERINARY REVIEW, Vol. XV. p. 119) which it appears, might well leave an erroneous impression in the minds of some, regarding the requirements for admission to the United States Veterinary Medical Association. Dr. Weber is reported as asking, "Are the graduates of agricultural colleges recognized by the United States Veterinary Medical Association as regular graduates?"

In reply, Dr. Hoskins is reported as stating "Yes, that they were admitted to membership at Chicago, Sept. 17, 1881."

The date given is evidently wrong, as all veterinarians know, and it seems safe to say that the entire answer of Dr. Hoskins must have been erroneously reported by the Secretary of the Keystone Veterinary Medical Association.

The Constitution and By-Laws of the United States Veterinary Medical Association explicitly state that only graduates of a "regularly organized and recognized Veterinary or Medical School," can be admitted to membership and thus places it beyond the power of the Association to admit men to membership on agricultural diplomas.

W. L. WILLIAMS, V.S.

AMERICAN VETERINARY REVIEW,

AUGUST, 1891.

EDITORIAL.

VETERINARY CURRICULUM.—Considering the period during which the arts of teaching have been applied to the subjects included within the range of veterinary science and practice, in most of the countries of Europe, and notably in France, the results, up to the present time, hardly seem to be adequate and satisfactory. That the experience of these years of trial has not brought the instructors to the point of perfection in their methods and appliances as teachers, is perhaps not to be wondered at, but that they ought more nearly to have approximated that point, may safely be affirmed. French veterinarians have not been unobservant of this condition of things, and of late years they have not been backward in suggestions of changes and improvements, until at length, as the result of the careful and laborious study of a committee of veterinarians, a plan was formulated embracing the changes and improvements judged to be desirable, and their conclusions having been duly submitted to the proper authorities, have been by their order put in the course of experimental and practical trial.

But it would seem that an important question has still been somewhat overlooked, in omitting to provide for so essential a matter as the creation of a special chair of Cattle Pathology. It is, indeed, a most remarkable fact that such a special department has not been in existence from the first as a separate chair. We well remember how Alfort's clinics were comparatively lacking in cattle patients, though the

great Delafond gave us as good a course of lectures on cattle diseases as could be obtained in either of the other two French Schools at Lyons or at Toulouse, and still the latter was considered superior in respect to the opportunities it afforded for the clinical cattle study, although in respect to equine patients the first place was accorded to Alfort.

The object of the new departure, as we understand it, is the formation of a special department, with a special professor, upon whom will necessarily devolve the duty of providing sufficient material for the cattle clinics. The fact is certainly a peculiar one, that the land which is the birthplace of veterinary science should be the most dilatory in establishing this as a special department, so long after its right to be so distinguished had been recognized by some others among the principal veterinary schools of Europe. We say *some*, for in several we still find the subject of Bovine Pathology committed to the care of the Professor of Theory and Practice.

On this continent our schools have copied so much from the European style of organization that it is not surprising that the same condition should exist on the point in question. Yet here there are one or two schools where the pathology of cattle forms a distinct chair, while in some others it is given to the Professor of Theory and Practice, meaning, often, the overtasked gentleman who lectures on equine pathology, on bovine diseases, and also, as a complimentary matter, adds to his already heavy burden that of delivering lectures on diseases of the sheep, the hog and the dog.

There is evidently something here to reform, and on this continent, where the schools are yet young (though some may claim a life of a quarter of a century), the present is the time to see that the work of organization is well studied and settled, in order that the labors of the members of the faculty may be equally divided and fairly appointed.

In glancing over the announcements of our American schools, we cannot avoid observing that in some instances the hours of the curriculum are so filled as to assign work to one chair which belongs to another. In one it is a special department on ophthalmology, or of diseases of the feet, which

are parts, evidently, of the department of surgery. In another it is a special department of helminthology, or of dental surgery, which belong respectively to general practice and to surgery, all of which we cannot but consider great error, and one which calls for rectification at the hands of the governing faculties of the American veterinary schools, through a concert of action which must be advantageous to all, and principally to the profession—when adopted.

Why cannot these various bodies meet together, say representatively, in a convocation of the Dean of each of our veterinary institutions, to discuss this subject, and any other that might be submitted to their consideration. Such a convocation would certainly not be out of the way; even as a novelty it would be a great event, from which much benefit might be extracted for our profession. When shall the first meeting be announced?

GENERAL MEDICAL EDUCATION.—A new departure has also been taken by several of our medical schools, the bugle being first sounded in Boston, and answered by Philadelphia, which it is intimated, *sotto voce*, will also soon have a response from New York. This new departure is the extension of the medical course to four years' attendance, and it will be none too short a time to acquire knowledge and skill sufficient to practice the healing art in its best manner. This is great progress. The Medical Department of the University of the City of New York also makes some changes, establishing three years attendance at college as obligatory, and, in effect, endowing the different chairs, and making her faculty independent of the number of students—probably the best measure for assuring the thorough execution of their duties on the part of the faculty, and for relieving the examination for graduation of any suspicion of interest and partiality.

These are important steps, indeed, and veterinarians cannot consider them without feeling a sentiment of ambition, while realizing the obligations which these changes in medical education are calculated to impose on the student of veterinary science. The days of private undertakings in the es-

tablishment of veterinary schools are coming to an end, and the institutions that now exist are destined to become in due time branches of 'university study, and placed under obligation to accept the laws and regulations of the parent curriculum. The two years' course of crowded studies, begun and finished in a few months, is doomed, and until these changes are realized, the veterinary profession will never reach the standard to which it should aspire.

We may possibly, from these expressions, be accused of a change of opinion, from having some time since uttered doubts as to the propriety of a similar amalgamation, but we cannot continue blind to the signs of modern progress. Already, several of the continental universities have their veterinary departments, and we have them here; we have them in Canada; and it is urged even in England. This evidently shows that as yet the subject of veterinary education has not said its last word, and it seems no more than right to claim for it the benefit of the enlargement and thoroughness which it will enjoy under the care of our universities, as branches and departments of the great parent body.

PROFESSIONAL ITEMS.—The following information, recently received, is pertinent, and corroborative upon the subject of our preceding remarks. They strongly confirm the views to which we have been led to give expression:

Our friend, Dr. F. H. Osgood, M.R.C.V.S., has accepted the professorship of Cattle Pathology in the veterinary department of Harvard University. He will prove a valuable acquisition. Few men have had better opportunities for preparation than Dr. Osgood for the work of his department, or is capable of doing better justice to the duties of his post.

And again, it is announced for the veterinary department of Pennsylvania University, that important additions have been made to the Faculty by the Board of Trustees at their last meeting, in the choice in the veterinary department of Dr. S. S. J. Harger, as Professor of Veterinary Anatomy, and Dr. Leonard Pearson, who is now pursuing special studies at the Royal Veterinary School of Berlin, as Assistant Professor of Veterinary Medicine.

A NEW VETERINARY COLLEGE.—The Cincinnati *Journal* brings us the news that "A College of Veterinary Medicine and Surgery" has been incorporated by the Secretary of State. We have not received any direct information relating to this new addition to our veterinary family, and hope that some of our Ohio friends will let us know how the infant is getting along. Let us meanwhile express our congratulations to its relations, and assure them of our best and sincere wishes.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.—We have received the following notice from the Secretary of the New York Veterinary Society, and take pleasure in calling the attention of our *confreres* from the Excelsior State to this meeting, which we have no doubt will prove most interesting:

The semi-annual meeting of the New York State Veterinary Medical Society will convene for regular and important business at the parlors of the Grand Central Hotel, Broadway, New York City, on Wednesday, August 12, 1891, at 9 o'clock A. M.

Matters pertaining to veterinary legislation will be brought before the meeting, and will be very interesting to all veterinarians who are graduates and duly qualified to practice in this State. Papers on professional topics will be read by prominent members of the society.

It is earnestly hoped that all qualified veterinary surgeons who are not members, will take this opportunity to attend and become members of the society, whose aim and object is to promote the standing and protect the veterinary profession in the empire State.

ORIGINAL ARTICLES.

THE COMPARATIVE RELATIONS AND VALUES OF THE ANÆSTHETICS.

BY G. ARCHIE STOCKWELL, M.D. F.Z.S., (Member of the New Sydenham Society, London).

Written expressly for the AMERICAN VETERINARY REVIEW.

II.

In the REVIEW of August, 1890, I considered Chloroform at some length. This undoubtedly is the most popular anæsthetic for experiments carried on within the precincts of

the physiological laboratory; likewise, it is the favorite of the majority of veterinary practitioners, who, as a rule, are none too familiar with other anæsthetic agents, though the latter are none the less worthy of study, and often prove—aside from the mere question of danger—of even greater value.

That chloroform, as compared with the commonly accepted methods of employing ether, is the more convenient agent, and also more easily procured, transported and administered, may be admitted; but that it is the best anæsthetic for general purposes is by no means to be conceded. Neither can it be admitted that even in the majority of cases, either in man or lower vertebrates, that it is the most desirable. Each anæsthetic has its special place and role, and special adaptability, and the practitioner must seek this and decide accordingly, in order to secure the best results. Again, though the lives of other vertebrates, as compared with man—owing to the egoism of the latter—are not, from moral and sociological standpoints, considered of equal value with human life; this is purely an arbitrary assumption that should have no weight with the truly scientific practitioner; there is no reason why a profession devoted to the saving of life and the mitigation of suffering, should not *always* avail itself of the best, and, therefore, most scientific appliances. This applies to anæsthetics as well as to medical and surgical therapeutics proper. It seems to me, that to draw a line in this respect between animals and man is criminal as well as arbitrary, for there are many biped brutes less deserving of sympathy than the quadrupeds. Again, there are many of the former who regard animal lives, which represent a monetary value, of greater moment than the lives of their families and immediate offspring: the demise of the latter is the “will of God,” for they represent an outlay, and, moreover, are easily replaced in a way that tends to add to his resources; while the former are regarded as income, and so much available capital, and their loss, instead of being a design of Providence is attributed solely to the ignorance of the practitioner. This seems almost a brutal assertion, but it

is none the less true, and more common by far than may be generally imagined. With this digression, intended solely to inculcate the broad principle, that therapeutics is not to be measured or limited by arbitrary zoological lines drawn by the self-sufficient vertebrate, and that medicine, whatever its special class or rank, is truly scientific only in proportion to its best and highest applications. I will turn to the consideration of :

ETHER.

Although this agent has a long range in applicability in medicine and pharmacy, and is daily increasing in value as a solvent, its most important place is as an anæsthetic. As an anæsthetic, moreover, it is scientifically the only one adapted to general use, and really appropriate to all uses, and—with the possible exception of nitrous oxide—the only *safe* anæsthetic for either general or special purposes : I use the term “safe,” however, in a relative sense, for the condition known as anæsthetic is in itself a dangerous one, and dangerous in proportion to the degree to which it is carried. To impress this fact, it is only necessary to remember that the number of deaths fairly charged against all anæsthetics is quite numerous, and the number constantly increasing against all.

When ether is mentioned in connection with anæsthesia, it is pure *oxide of ethyl* (*ether fortior*) that is understood, and not the compound sanctioned by pharmacopœias, and generally sold in shops “as sulphuric,” which contains usually about 25 per cent. of alcohol. There is little difficulty in making the selection, however, as in the United States Dr. Edward R. Squibb, of Brooklyn, practically enjoys a monopoly of the product, which is sold only in sealed tins that bear his label.

The especial advantage of ether as an anæsthetic agent is, that it will increase instead of diminish arterial pressure, or, in other words, that it is a cardiac stimulant instead of a depressant like chloroform, the pulsation in lethal cases continuing for a greater or less period after arrest of respiration. Its physiological sequences, when inhaled or injected into the rectum, colon, and peritoneal cavity, are as follows :

1. The cerebrum :
2. The cerebellum :
3. The sensory centres of the spinal cord :
4. The motor centres of the spinal cord :
5. The sensory centres of the medulla oblongata :
6. The motor centres of the medulla oblongata :

Thus it will be observed, that if the drug be pushed to its utmost limits, the animal in consecutive order will lose :

1. Local sensibility of extreme parts and the control of certain muscles there situated :
2. Intellectual power ;
3. The power of co-ordinative movement, and of the locomotor organs generally :
4. The ability to perceive sensory impressions, even in localities in immediate proximity to the spinal centres, which should be the utmost limit where the conservation of life is desired :
5. The power of respiring :
6. The movements of vegetative life, *to wit*, of the heart, intestines, etc.

Just here permit me to recall again one of the conclusions formulated by the second Hyllerabad Chloroform Commission, in paragraphs 45 and 46, of the report as published in *The Lancet* of London.*

The experiments with ether show that it is impossible to procure anæsthesia with this agent, unless some form of inhaler is used which *thoroughly* excludes the air. If surgeons choose to be content with a condition of semi-anæsthesia, it can, no doubt, be produced with perfect safety * * * by ether held rather closely to the mouth * * *. If more perfect anæsthesia is required, it can be procured by excluding the air more rigidly, but then there is *exactly the same danger as from giving chloroform !*

This certainly admits of but one interpretation, viz., that where perfect anæsthesia is to be desired, the action of ether and chloroform is every way identical ; at the same time is implied—which will be news to most surgeons and anæsthe-

* January 18th, 1890.

tists—that the majority of operations are performed during an imperfect condition of anæsthesia.

In the previous paper in the REVIEW, devoted to chloroform, it was, I think, sufficiently shown that such premises are untrue, more especially the first. Admitting what was pointed out by Dr. J. Snow, as long ago as 1856, that under specific circumstances chloroform may induce fatality in man through respiratory paralysis, or simultaneous arrest of respiration and circulation, and is more prone to do so in animals under experimentation, for reasons before explained; such is by no means a frequent or even common result, even among the latter; and further—the *Felidæ* possibly excepted—such has supervened in animals only when administered in specific quantities and volume, with the deliberate purpose of inducing death! At the same time the Commission ignores the fact, unwittingly proven by itself, that complete and sudden vasomotor paralysis, which has positively never been observed to follow ether anæsthesia, is a constantly threatening danger where chloroform is employed.

The experiments of Dr. Anstie are doubtless familiar to most of my readers. Of ten rodent animals intended to be killed by being introduced into an atmosphere super-saturated with ether vapor, three recovered, six exhibited the heart still active at periods varying from three to twelve minutes after respiration had failed, and in one, cardiac and respiratory arrest were apparently simultaneous, or nearly so, as “when the chest was slit open the heart seemed motionless, except for a slight pulsation of the auricles; irritation by pricking failed to set the ventricles in motion again.”

Recalling the fact that these experiments were made with the “sulphuric ether,” of the British Pharmacopœia of 1864, a somewhat imperfect product containing a goodly percentage of alcohol, I recently personally repeated, upon a series of thirty-seven rodents, employing the *etheris fortior* of Squibb; otherwise the circumstances and surroundings were parallel. The result was, that in each instance save one, the heart was found beating after respiration had ceased: the exception was an animal that began to again respire while

under the knife. The average duration of pulsations for the series was 257 seconds after the heart was exposed, which, allowing thirteen seconds for removal from the jar and vivisection, would make a total of four and one-half minutes—ample time, if such had been desired, to institute measures for resuscitation.

These experiments, and others that have been made by various individuals upon cats, dogs, hares, guinea-pigs, etc., in which varying quantities of stronger ether (sufficient to induce profound anæsthesia, however,) were respired, introduced into the rectum and colon, or injected into the peritoneum, fully vindicating the principle propounded by Dr. Snow, that fatality rarely, if ever obtains, save as the result of supersaturation of the economy; that is to say, that there must be arrest of respiration, whereby the blood is deprived of its necessary oxygen, the latter being replaced by ether vapor. If this premise be true, as it certainly seems to be, cardiac arrest can never occur save as a sequel to pulmonary paralysis, and even where there is ether narcosis tending to fatality, there is usually a margin wherein it is possible in most instances to resuscitate the patient. Herein is an immeasurable factor for safety, such as can secure to chloroform only in very rare and unusual cases. There is, perhaps, an exception, or at least partial exception, to be taken as to ether, that, however, does not apply to anæsthesia for surgical purposes, but to the physiological laboratory, since, as one experiment of Anstie's seems to prove, an animal introduced bodily into an atmosphere wholly saturated with ether vapor, and therefore with no opportunity for elimination, owing to the overloading of the circulation, due to the absence of oxygen, may succumb to apparently coincident or simultaneous pulmonary and cardiac arrest.

For a long time it was believed that the circulation and respiration were interdependent, and so the former made the basis of watchfulness in ether as well as chloroform anæsthesia; and even yet this is the procedure of many practitioners. Such, however, must necessarily prove a false guide and a "broken reed" to lean upon, since it not infre-

quently happens, in animals as well as man, that the pulse is greatly quickened while the respiration remains normal or undisturbed. Again, in anæsthesia, as in adynamic fevers, extreme rapidity of circulation is a symptom of cardiac debility, and in ether narcosis is the signal of danger and of impending pulmonary as well as cardiac arrest: it denotes supersaturation of the economy, whence paralysis may at any instant supervene, when it will first manifest itself definitely in the respiratory centers. Obviously it is such cases where we should fear almost simultaneous arrest of pulmonary and cardiac functions. The pulse, therefore, while it may advantageously and desirably be watched at intervals, in the main is of less importance in ether anæsthesia than the respiration, the character of which should be continuously and carefully scrutinized.

Another fallacy punctured, and lesson taught is, that cardiac excitement under ether does not pertain to a pre-anæsthetic stage, but instead must be held as evidence of partial paralysis of the sympathetic system. Manifestly the latter is involved, even in gradual anæsthesia, by the paralyzing influence of ether at an earlier stage of narcosis than that by which the medulla oblongata is affected. Says Dr. Anstie:*

It can hardly be doubted that the increased effects of more rapid impregnation of the blood with the narcotic would tell more rapidly on the sympathetic nerves than on the medulla oblongata, or on the pneumogastric branches, on account of the peculiarly intimate connection of the former with the arterial tree. And any one who has experimented upon animals that have died of apnœa must have been struck with the powerful exciting influence which can be brought to bear on the heart by rough handling of the thoracic sympathetic ganglia, such as must inflict injury on them not inferior to that which a paralyzing narcotic might cause. Under other circumstances it seems desirable to study carefully the various evidences of sympathetic paralysis which present themselves in the course of ether narcosis.

Essentially, then, ether anæsthesia is not divided into two stages, one of excitement, the other of narcosis, as is often

* Stimulants and narcotics, p. 275.

taught or implied, but the process is practically one, and consists, both in its early and late stages, of paralysis of the various sections of the nervous system. It must be admitted, however, that the drug has another physiological action, one quite different from the foregoing, that develops as the results of doses insufficient to induce paralysis of any portion of the nervous system, and which is stimulant purely and not to be considered as a stage of excitement; but this has nothing in common with anæsthesia.

I have before remarked that ether is a stimulant to both the respiratory and circulatory systems, which assertion, taken in connection with statements just made as to its paralyzing effects, may at first glance seem paradoxical. This is more apparent than real, however, as it is through this very paralyzing action upon the sympathetic system, disarranging the balance between the vaso-motor and vaso-inhibitory nerves, that this stimulation obtains. Thus the seeming gulf is bridged, and all discrepancies reconciled.

Ether, then, stimulates by a specific paralyzing influence both circulation and respiration, up to a certain point, beyond which it is dangerous to pass, and which need not be passed if the drug is understandingly administered. This I think I have sufficiently shown. Nevertheless, that it is not often properly administered, must be admitted, since as a rule, in the United States, "cramming" and "drenching" methods, as they are very properly dubbed by our brethren of the British Isles, generally obtain; it is such that have brought discredit upon ether abroad. It is an almost universal method in hospitals, and in no small degree in private practice, to relegate the administration of the anæsthetic to an inexperienced junior, or a student, and from the very first to crowd the inhaler, saturated to its utmost with the drug, down upon the nose and mouth and there forcibly hold it in spite of the struggles of the patient, not only until anæsthesia results, but uninterruptedly throughout the operation except as stertor supervenes. It is simply a smothering process, dangerous and demoralizing to the patient, disgusting to observers, misleading in the estimate conveyed to students as to the safety of

the drug, and discreditable in every way to both operator and anæsthetist, who place themselves in a dilemma between two horns—*unpardonable ignorance* and *vicious cruelty*. How different from the custom abroad, notably in the United Kingdom, where the management of anæsthesia is always intrusted to an expert, a professional anæsthetist! The result is, the patient is suddenly choked and strangled into submission and into narcosis, by means of a highly irritating vapor, without once being permitted a whiff of the much needed oxygen. All the sensations of asphyxia and impending dissolution are present, and it is little wonder that fatalities from shock and other causes sometime supervene. Indeed, the miracle is they are not more frequent, and that bronchitis and other unpleasant and possible sequelæ are not more common. A few years since a case of strangulated hernia was brought into the operating room of one of the large American hospitals, when the surgeon commanded his assistant, an undergraduate, to “use plenty of ether and press the cone down firmly on the mouth and face to avoid a lengthened period of excitement.” This was done, and the hernia reduced by taxis during the relaxation, when it was discovered the vital spark had fled; life was extinct even before the operation began, the poor fellow having been *smothered* with ether vapor. In all probability the first sudden application produced strangulation and spasmodic closure of the glottis.

It should never be forgotten that ether vapor when too much diluted with air is a simple stimulant incapable of inducing any condition except excitement and intoxication, no matter how much used or for how long a time; and, further, that when too diluted and the mechanical act of respiration at the same time obstructed by pressing down upon the mouth and nose the cone or inhaler, the patient may be very easily partially or wholly suffocated.

Neither is there economy of time or material in the “cramming” process, as is too frequently claimed, as it tends to render the patient resistant, and consequently more difficult to anæsthetize, and to keep anæsthetized. The short, shallow and imperfect respiration induced thereby, and the irritation

that obtains, so long as they continue, admit of the utilization of but very little of the ether vapor, and thus anæsthesia is delayed, the anæsthetic uselessly wasted, and precious moments lost: and it must be believed also that this is not without a pernicious effect on the one undergoing anæsthesia, since it is not the contrary, and there is no middle ground. On the other hand, nothing tends more to secure the prompt and successful effect of ether than the avoidance and prevention of the strangling interference with the mechanical act of respiration. It takes but a moment in either man or animal to educate, so to speak, the lungs and respiratory passages, and allow to empty themselves of residual air by a gradual process of expiration, and this secures the confidence of the patient, encourages easy breathing, and thus tends to diminish the danger of shock; moreover it mitigates, even if it does not wholly do away with, reflex muscular spasms and excitement. Finally, when the ether has filled the lungs, the inhaler may be pressed close to the mouth and nose, when anæsthesia quickly follows. By this method vastly less ether is consumed, and the much-boasted superiority of chloroform as regards rapidity of anæsthesia is proven illusory.

The fact is, too much ether is generally employed. The agent is ignorantly or carelessly wasted, or both, and this is favored by the general assumption that the drug, under any and all circumstances not due to some morbid condition pre-existing in the patient, is always innocuous and hence safe.

Such premise is false both in theory and fact. The condition of full anæsthesia, regardless of the agent employed, is, physiologically considered, most grave, for by suspending more than half of vitality it so closely approaches death as to be, under certain conditions, constantly recognized as one of the stages of final dissolution; when we consider it fully, it becomes a cause for wonder that the boundary line between life and death can be so closely approached and yet so rarely passed. Familiarity therewith, and a distant view of accidents, owing to their comparative infrequency, lead medical men to plunge their patients into anæsthesia with little regard for its true nature and gravity; it is forgotten that a condition

so abnormal and in contravention to general physiological law, only a few years since excited the gravest apprehension, and that even now, when witnessed under other circumstances and surroundings—as the effect of narcotics, and defined as *poisoning*—is a cause of profound anxiety and secures the most active measures for its relief. It should be remembered that anæsthesia is *narcosis*, and consequently *poisoning*. In this connection permit me to quote the veteran, Dr. Edward R. Squibb,* one of the ablest of American scientists, whose laurels have been won in the ranks of both medicine and pharmacy, and as much in the physiological laboratory as over the chemist's table :

The roughly expressed though perhaps practical condition essential to anæsthesia, is diminished oxydation of the sensorium, and the primary object is to confine this within the limits of safety. It is a kind of partial asphyxia or suffocation, occurring, not in the organs of respiration and circulation primarily, but far back of those in the tissues where the vital power is generated or renewed. The air-passages normally admit oxygen, and the blood takes it up and carries it, but carries with it an agent which prevents or modifies its assimilation in the tissues which supply the vital forces. To diminish this assimilation or this supply, seems to constitute anæsthesia. To arrest or prevent it, is death by narcosis. Hence the line of greatest safety in practice is to regard the difference between anæsthesia and death as a difference in degree or quantity only. The condition may be partial, full, profound, or fatal, but with no distinct boundary line between the degrees. The two intermediate degrees or stages constitute anæsthesia proper, and the full anæsthesia is generally required in surgery, while the stage of partial anæsthesia is generally sufficient in medicine. In the production of anæsthesia, the more powerful, prompt, and efficient the agents and the larger the dose, the greater the liability to overleap the intermediate stages, and unexpectedly extinguish life.

This seems but plain, common sense, and physicians are very familiar with the principle in the action of all toxic agents and in the toxic influence of all acute diseases, and yet they often fail to apply it in their selection of the agent and the dose to produce this most acute of all diseased conditions,

* Ephemeris, vol. 2, p. 629.

wherein the issues of life and death are narrowed down—not to days and hours, but to a few minutes. Add to this fact that this condition rests with the physician or surgeon whether to produce it or not, and it is difficult to understand how its importance can be overestimated.

The condition known as anæsthesia must therefore be admitted to be in itself a dangerous one, and dangerous in proportion to the degree to which it is carried. And it must also be admitted that when the degree of full anæsthesia is reached, the signs which mark the approach of the profound and fatal stages are very much marked by the condition itself, so that the attempt to maintain the safer stage may produce those which are less safe without recognition of the fatal progress until one of two or three things suddenly occurs, with more or less sudden death. Then if the condition of anæsthesia be a dangerous one, all anæsthetics must be dangerous.

The waste of ether when employed for anæsthetic purposes has already been attended to. This is generally very great, and likewise unnecessary ; there is no reason why more of this drug should be required than of chloroform, if properly administered. It is more than probable, also, that the nausea and vomiting that so frequently supervenes upon its use, or following anæsthesia, is due to super-saturation of the patient with the vapor—at least such is the experience of the writer. With increased knowledge in the employment of anæsthetics, the volume of ether required to produce a definite result, is less than one-fourth that demanded fifteen years gone, and usually a half ounce to an ounce suffices for the induction of anæsthesia, the quantity demanded to maintain narcosis being proportionate to the length of time required for the operation. At a recent operation for the removal of a lupus of the glans penis, in a man of 25, the time required, dating from the moment the patient ascended the table until he was snugly ensconced in bed, was fifty-five minutes, and the amount of ether consumed was but seventeen fluid drachms ; with long experience with both ether and chloroform, I am sure I could not have done better with an equal volume of the latter. Here I may be permitted to remark, that Dr. Squibb's apparatus for the administration of ether, though in little favor with those who believe in the drenching

method, is often a valuable adjunct where rapid anæsthesia is desired with a minimum expenditure of fluid.* In this connection, some experiences of Dr. Squibb, as detailed in *Ephemeris* for July, 1884, † are of especial interest:

In the use of ether as an anæsthetic there is great room for reform, Just how small a quantity of ether would produce anæsthesia in the average adult subject is not known, though that is exactly what is wanted, but it is entirely safe to say that more than one-half the ether taken for this purpose is wasted; and not simply wasted, but injuriously saturates both the patient and the attendants. Indeed, the writer has frequently breathed the atmosphere of small ante-rooms, where patients were being etherized, where the proportion of waste ether vapor was so large as to render the air pretty certainly explosive. Ether vapor has a very considerable tension or power of diffusion, and air becomes nearly saturated with it very quickly and very easily; and such air is very actively anæsthetic. It is a habit in laboratories, when a flask or bottle, having been washed, has to be dried quickly for use, to rinse the water out first with a little alcohol, and then to rinse out the alcohol with a little ether. Then by inserting a tube in the bottom of the bottle and drawing the air into the lungs, by applying the mouth to the other end of the tube, all the ether may be quickly drawn out in the state of vapor, leaving the bottle dry. Now this does very well with small bottles, but when the ether with which a two-gallon bottle has been rinsed out, is poured out as far as possible, about one or two fluid drachms remain in the bottle, spread over the interior. The first and second inspirations through the tube are but partial, being interrupted by coughing or closure of the glottis, but they serve to so anæsthetize the air passages, that the fourth and fifth inspirations and all that follow may be deep and full. It has often happened to the writer, that before the ether vapor is all drawn out of the bottle the stage of excitement had passed, and that of anæsthesia is so well advanced that the tube can no longer be held to the lips. In a personal experiment based upon this experience, a half fluid ounce of ether contained in an eight-ounce, wide-mouthed bottle, were shaken round the bottle and the vapor simply smelled deeply with full inspira-

*For details and description of this apparatus, I will refer my readers to the *Transactions of The New York State Medical Society* for 1871, p. 197.

† Vol. II., p. 631.

tions, the bottle being removed and shaken round during the time of expirations. Seated in an armchair in such a position as not to be likely to fall, the smelling, in less than half a minute, had passed the experimenter through the stage of stimulation, and could only be continued by determined effort, the bottle constantly tending to slip from the hand, and the arm almost refusing to move by order of the will. Sleep must have occurred before the power was entirely gone, for on waking, it was found that ten minutes had elapsed since the beginning of the experiment. The bottle was found on its side on the floor, but with a considerable portion of the ether still in it. From this it is quite certain that from two to two and a half fluid drachms, if all utilized in the way described, is sufficient to anæsthetize one who is quite habituated to a prevalence of ether vapor around him.

Further, regarding nausea and vomiting, which is such a bugbear to some, I may say that aside from the quantity of ether inhaled, if the patient, animal or man, has partaken of a minimum of easily assimilable food at some time previous, and not too remote from the hour of intended anæsthesia, emesis is not likely to supervene during narcosis, though it or nausea may obtain in some slight degree after partial return to consciousness; but in no case is it accompanied with the frightful tearing retching that so frequently follows chloroform anæsthesia. The point to be remembered is, to so plan the administration of the anæsthetic that it shall find the stomach partially, and the duodenum wholly, employed, that they may not through idleness appeal to the gastric plexes. Too much food is as bad, or worse, than too little, for then it is rejected by spasmodic contraction of a distended gastric viscus. As a matter of fact, in domestic animals emesis is less apt to supervene in equines, who vomit only with difficulty, as the sequel of ether anæsthesia, than through chloroform anæsthesia; and the same is equally true of the *Canidæ* and *Felidæ* as a class, and who reject the contents of their stomach with the greatest facility.

The instances where chloroform should be preferred to ether cannot be accurately defined; this must be decided by the anæsthetist according to circumstances, and the surroundings and conditions affecting the one to be anæsthetized.

Nevertheless, there are some few occurrences and morbid conditions that strongly suggest for themselves a preference for the first named agent, viz. : 1. Aged creatures, who, as a rule, bear chloroform better than ether, especially as the latter may induce pulmonary troubles; 2. Operations about the mouth or respiratory organs where the actual cautery is to be used—ether is inhibited by its inflammability; 3. Cases of lung infection; but diseases of the pleura do not contraindicate ether if it is carefully and understandingly administered; 4. Where absolute muscular relaxation is demanded, as for the diagnosis of tumors, reduction of luxations, etc.; here chloroform is vastly the superior of ether because of the certainty of its effect; 5. In certain abdominal operations, such as herniotomy; 6. In cases where venous engorgement is a decided advantage, as in the ligature of large arteries; 7. Chloroform is generally the more preferable agent where an anæsthetic is required to be frequently exhibited to the same individual, man or animal, the class felidæ excepted; also possibly, where convenience, or unconscious anæsthesia is a prime factor, in the young and vigorous, and there is assuredly no tendency to degenerative disease; and when anæsthesia is to be but brief or partial.

In aged animals convenience may suggest, at times, the primary employment of chloroform, but where anæsthesia is to be prolonged, its replacement by ether will be found less taxing and wearing to both anæsthetist and patient. Again, degenerative disease of the heart or kidneys, or both, as they are associated and interdependent more often than is commonly imagined, providing there are no serious pulmonary complications, ether should by long odds obtain the preference. But if pulmonary disease co-exists, the choice of anæsthetic must be the result of individual judgment on the part of the anæsthetist, based upon the peculiarities of the individual case. Where pulmonary disease exists without renal or cardiac complication, the morbid condition becomes, *per se*, an element of safety in the administration of chloroform, while it inhibits the employment of ether.

As compared with other agents ether, as a general anæs-

thetic, unquestionably stands first in regard to safety. The deaths justly accredited to it are not greatly in excess of those properly chargeable to nitrogen protoxide, and at the same time it must be remembered that the latter is commonly employed for a momentary and fleeting effect upon *healthy* organisms—as in dentistry—while the former is used for prolonged effect in diseased and debilitated conditions where the nervous system has been subjected to repeated assaults in the way of irritation and strain, or in conditions of sudden shock, as in trauma. Under such conditions, it will readily be seen that comparison as to safety, based upon existing evidence, is unfair; that the balance of safety in favor of nitrous oxide may pertain to conditions of application rather than to the agent itself.

A mixture of nitrous oxide and ether vapor has been suggested as doing away with the unpleasantnesses that sometimes obtain to the latter *solus*, but this has not been borne out by personal experience. So also the “triple,” or “A.-C. E.-mixture,” has in some indescribable manner obtained the reputation of affording all the advantages pertaining to both ether and chloroform, with none of their disadvantages. Given, as it must be, with plenty of air, and under the conditions demanded by chloroform, it invariably gives the typical trace of the latter, proving that to it, and it alone, the mixture owes its anæsthetic influence. If administered freely, it often induces very rapid and dangerous fall of blood pressure, such as has been observed from the administration of spirit of chloroform or chloric ether. It is, then, simply a *dilute chloroform*, and by no means the best dilution, since the addition of the ether is antagonistic; besides being unphysiological, it is an unchemical and every way unscientific combination. Whatever there may be of either good or evil pertaining to ether, chloroform, or alcohol, should be kept apart; and the habit of uniting the one, and at the same time attempting to prevent the undue influence of the other, must always remain a matter of uncertainty and doubt, especially since ether and chloroform are in a considerable degree physiologically antagonistic; the danger to respiration and circulation would be

doubled but for this, and in fact the tendency to cardiac arrest is enhanced. It would be well always to bear in mind the universal cosmical law that when there is an addition to good and bad of equal proportions of both, the bad is especially prone to dominate, and in the ratio of the square of the addition plus the square of the original. Breeders too frequently discover this to their sorrow.

During the last decade, a new method of inducing anæsthesia has been inculcated, whereby the anæsthetic agent is introduced to the general economy through the rectum and colon instead of the respiratory passages. It has secured some few followers, but only among the ignorant and half educated, since it is both irrational and dangerous, and places the action of the anæsthetic beyond control; already several lives have succumbed to the procedure. The absorption of the vapor by the walls of the intestine must necessarily be irregular and uncertain in consideration of the known phenomena of local anæsthesia, for if the walls be thoroughly paralyzed and relaxed the contained anæsthetic vapor remains inactive. On the contrary, if there be no obstruction by fæces or by spasmodic contraction, and the vapor passes far up in but moderate quantities, and is then insufficient to stimulate the parts, absorption may be very rapid.

In ether and chloroform narcosis that threatens life, when all else fails, much may be expected from immediate tracheotomy and forced respiration by means of bellows.* Artificial respiration after the method of Sylvester—which is by long odds the best—often fails to supply the lungs with oxygen in sufficient quantity to keep up the action of the heart.† In such cases forced expiration will in many, and perhaps the majority of instances, prove sufficient, especially in conjunction

* See paper by Dr. Geo. E. Fell, in Transactions of the New Jersey State Medical Association for 1888; also *Medical Age* for Sept. 25th, '90.

† Benj. Howard (Br. Med. Journal, 1888, p. 1455) in a paper read before the Medical Society of London, suggested that the cause of death in surgical anæsthesia is often due primarily to the valve-like action of the epiglottis, which, falling backward, completely closes the laryngeal aperture, rendering abortive all efforts at artificial respiration.

with the hypodermatic use of anyl nitrite or nitroglycerin. Here, the patient instead of being squeezed, rolled, and tumbled about, is entirely passive, and will lie for hours without moving or appearing uncomfortable, or as long as forced respiration is kept up. Those who have had experience in the physiological laboratory, know that in dogs overdosed with an anæsthetic, life may be prolonged for indefinite periods of time by employing the bellows in connection with an opening into the trachea, hence there is no valid reason why the same procedure should not obtain where it is desirable to *save* life. It may here be noted that Dr. Geo. E. Fell has in this way been instrumental in saving several cases that were deemed hopeless; in one instance the life of a man was preserved through forced respiration continued without interruption for more than thirty hours; *twenty* grains of morphia had been ingested eighteen hours before a physician was summoned.

NOTE.—It was my original intention to speak of the other anæsthetics in this connection, such as ethyl bromide, ethyl chloride, methylen bi-chloride and nitrous oxide, but the length to which this paper has grown forbids. Whether I shall take them up later remains to be seen. I have, however, recently devoted considerable attention to each in the columns of the *Therapeutic Gazette* for September of last year.

PRELIMINARY REPORTS UPON KOCH'S ANTI-TUBERCULAR FLUID.

Translated by R. MIDDLETON, D.V.S., Philadelphia, Pa.

The following communication has been received by the "*Vos-Zeit*," respecting experiments with the Koch fluid, as made in Dorpat, Russia, upon cattle suffering from tuberculosis:—At present careful reports are being issued upon the inoculations which were undertaken at the veterinary institute in this city. After the presence of phthisis pulmonalis had been ascertained beyond controversy, by the physical signs displayed by the subjects, and also by the finding of the

tubercle bacillus in the bronchial and lacteal secretions, the cattle received subcutaneous injections of 0.1, 0.2, 0.3 ccm. of the lymph. On the day before the exhibition of the medium, the temperature was recorded every two hours from eight o'clock in the morning to six in the evening. On the day of the injection, and also on the following days and nights, it was measured every hour. The symptoms displayed when the fluid was introduced into the consumptive cattle were developed twelve hours later, and persisted for four; the temperature was notably increased. In some cases it reached 107°F; the intensity of the reaction, as well as the length of the febrile period, depended upon the quantity of the liquid injected.

The respiratory act was accelerated, and performed with more or less exertion; the appetite was likewise disturbed. The fluid when injected into healthy animals produced no deviation from normal; the post mortem obduction of such animals was also negative.

Gutman, who superintended the experiments, expressed his judgment of the results in the following words: "The Koch lymph is an excellent diagnostic agent in tubercular cattle, and as such is of the greatest economic and veterinary importance."

These are the first official notices regarding the action of the medium upon tubercular animals of the bovine species. It is to be regretted that they were not issued from the land in which the celebrated discovery was made; it was not, however, for the want of suggestions in this direction. The trials will shortly be inaugurated upon an extensive scale in this country (Germany).

GERMAN REPORT.

The favorable results obtained in the human species by the use of the Koch fluid in the diagnosis of tuberculosis, has induced the Royal Board of Health to grant the Secretary of the Interior permission to try the worth of the agent upon tubercular cattle. The exceeding difficulty of an infallible diagnosis has always stood as an impediment to the perma-

nent eradication of this disease. Should the Koch medium become a practicable means of determining tuberculosis in animals, it would not alone increase the efficiency of the sanitary police, but it would materially aid the development of the agricultural and breeding interests.

To decide to what extent, and in what dose the agent reacted in cattle, the health office purchased two adult cows and one heifer. By special permission these were placed in an experiment stall in the Royal Veterinary College in Berlin, and at the expense of this institution were fed and attended.

The trials were carried out by the government adviser, Roeckle, and Dr. Schütz, rector of the college, under the direction of Prof. Dr. Koch.

The two cows were selected as tuberculous, from a large dairy farm; the calf was in perfect health, and was to serve as a physiological standard. All of the animals were examined at short regular intervals for several days previous, and subsequent to the injection; the chief purpose of this being to note the variations in respiration, temperature and pulse. At a determined time after the reception of the virus, the subjects were slaughtered.

Each animal received 0.5 ccm. of a Koch fluid, diluted with 4.5 ccm. of a $\frac{1}{2}$ per cent. phenol solution; the mixture was injected at one time upon the chest (dewlap) after the hair had been clipped and the spot cleaned and disinfected; the puncture was afterward closed by a flock of absorbent cotton dipped in iodoform collodion. The results were satisfactory throughout and in no respect complicated.

Case I.—Experiment animal; a seven year old cow of the Holland breed, 560 kilogrammes live weight; well advanced in pregnancy and yielding no milk. *Bacillus tuberculosis* not found in the expectorated secretion; temperature, 101° - 102° ; pulse, 64; respiration, 18 per minute. Injection given at 8.30 a. m. on the 24th of January; the temperature steadily advanced, with variations, up to 9 o'clock p. m., when it reached 104° ; between 3 and 5 o'clock on the next morning it had registered 104.5° , by one o'clock p. m. it had receded to 102° . Post mortem showed unequivocal tubercle of the lungs and

lymph glands of the chest; the spleen was somewhat swollen, and in the caseous masses of the lungs numerous bacilli were proven.

Case II.—Experiment cow, seven years old, Holland breed, weighing 590 kils.; not pregnant, and giving milk only from three teats; from the fourth teat a small quantity of a slightly opaque, watery fluid, was expressible; in the latter and in the milk secretion no bacilli could be detected. Rectal temperature, $100-101^{\circ}$; pulse, 48; respiration, 12-14 per minute. Injected on the 26th January at 9 a. m.; shortly afterward the temperature began to ascend, and at 8 p. m. it stood at 104.4° ; on the following day, 1 a. m., it reached the acme, 105.6° ; by 7 a. m. the thermometer indicated 104° ; from this time the retreat was continuous up to 3 p. m. when it had sunk to 101.5° . Post mortem exposed many discreet and confluent tubercular collections in the lungs, spleen, liver and lymph glands; echinococci were also found in the lungs and liver bacilli in the caseous product.

The pyretic reaction required about eleven hours to develop, and persisted for the same length of time. Some hours subsequent to the introduction of the lymph the point of injection was swollen and red, and upon pressure the patients evinced pain; these symptoms disappeared, however, during the following day.

Case III.—Control, or physiological subject of the Anglo race, three years old and weighing 327 kilo. Temperature, $100-101^{\circ}$; pulse, 52; respiration, 11-16 per minutes. Inoculated January 26th at 9 a. m.; neither a general nor a local reaction visible; post mortem also negative.

The execution of more comprehensive experiments is under consideration. These results essentially agree with those of Dr. Sticker, of Cologne, who injected 0.41 ccm. of the Koch fluid in each of four cows suspected to be tubercular. From seven to nine hours after the same, a fever reaction was observed; the post mortem confirmed tubercle in the lungs of all.

EDIBILITY OF THE FLESH OF POISONED ANIMALS.

Translated by RICHARD MIDDLETON, A.B., D.V.S., Philadelphia, Pa.

The question respecting the edibility of the flesh of poisoned animals is of great signification. Our literature is wanting in scientific investigations in this direction, and it cannot be wondered at, therefore, that opinions upon the subject vary so diametrically. For a long period the now edible nature was considered as a veterinary axiom; we erroneously supposed that the meat of a poisoned animal, in which the presence of the deadly agent could be chemically proved, had a poisonous effect when eaten by the human being. The presence of only the smallest traces of poisons, ascertained by the most delicate chemical reactions, go to prove that the meat is not necessarily poisonous—for every poison is, in doses small enough, uninjurious. By a short process of reckoning we quickly perceive that such flesh is not as fatal as it at first sight seems. The fatal dose of strychnine for a 10cwt. ox is 0.5 grms., and for a 1cwt. man 0.05 grms.; 1 kilogram (2.2 lbs.) of the flesh of an ox killed with this quantity contained 0.01 grms., a quantity which is for man not harmful.

The same results are deducible from the fact that the wild races of Africa subsist upon the flesh of animals which are never killed in any other manner than by the poisoned arrow; in the eastern and western portions of this continent the seeds of *strophanthus*, the modern celebrated heart tonic, are especially applied to this purpose. The *strophanthus* seeds are a thousand times more poisonous than the leaves of *digitalis purpurea*.

A dangerously poisoned meat is only imaginable, under peculiar circumstances, as when the poison does not emanate from the stomach, but from a wound of the skin directly into the muscles themselves, and so is given opportunity to concentrate at one point. Upon this ground we may explain why the above mentioned African natives excise the flesh in the immediate vicinity of the wound. After a subcutaneous

injection of strychnine, eserine, morphine or veratrine the adjacent tissues, to the point of puncture, are dangerous, despite the fact that the poison is rapidly imbibed by the circulation. That such cases may occur in the practice, is shown by an observation in Adam's *Wochenschrift* (1861), where the flesh of a cow treated with veratrum caused nausea and vomiting, when consumed. Another possibility is, that such meat may be more dangerous for man than for animals; atropin, for instance, operates much stronger as a poison upon man than upon quadrupeds. It is known that man has been poisoned by eating of rabbits and hare that had succumbed from consuming the leaves of *atropa belladonna*.

The small number of experiments and observations upon the subject are directly against a toxicological action of the flesh. Harms fed, without injury, the flesh of a horse which had received 50.0 grms. of *nux vomica* decoct. to three dogs weighing from 1 to 3 pounds; the same writer records that the meat of a cow which had received 46.0 grms. of tart. emetic was neither injurious to man or dogs; Feser has experimentally proved that the flesh of animals poisoned with strychnine and eserine may be eaten with impunity; Lappa and Spallanzani arrived at the same conclusion respecting arsenically poisoned animals; the result of Sonnenschein's investigations upon the flesh of a cow that had received altogether over a pound of arsenic, showed only 0.0002 grms. of the substance in a kilogram of the meat—surely not a dangerous quantity.

In order to answer this question for ourselves, we instituted a series of experiments upon sheep, with strychnine and eserine; while strychnine is the most deadly alkaloid for most domestic animals, the alkaloid physostigmine is more poisonous to the dog and to man. The result of the experiments, especially regarding the latter drug, are of practical value. These trials consisted in poisoning sheep with strychnine and eserine and afterward determining the toxicological character of the meat by the following means: partaking of the flesh ourselves, feeding it to dogs, by chemical analysis, by physiological action upon other animals; the re-

sults agree completely with the opinion formerly stated, to wit: that the flesh of sheep killed by the alkaloids strychnine and eserine, when eaten is absolutely uninjurious for man and dogs.

EXPERIMENT WITH STRYCHNINE.

1. A strong wether, weighing 39 kils., was killed by a subcutaneous injection of 0.05 strychnium nitricum; in 12 minutes after, the first symptoms appeared, and in 20 minutes the sheep died. We stewed and ate half a pound of the meat, together with the fluid therefrom, without noting any unpleasantness in the taste or experiencing any of the effects of the alkaloid. Three young dogs, weighing respectively 15, 17, 18 pounds each, received 1 kilogram of the flesh; despite close observation for several days no abnormal actions were seen.

2. A ewe weighing 24 kilograms was poisoned by injecting 0.03 strychnine—death supervened in 19 minutes. A half pound of the meat, together with the bouillon, was agreeable to the taste, not even being bitter or subsequently active. The same dogs, after consuming each 2 pounds of the meat, manifested no symptoms.

CHEMICAL ANALYSIS OF THE FLESH.

The extraction of the alkaloid was according to the method of Dragendorf. The muscle is cut as fine as possible and stirred with just sufficient water to give a thin broth; diluted sulphuric acid (1.5) is added until a distinct acid reaction is obtainable. The mass is now put into a retort and at a temperature of 50C. digested for 6 hours; after this the fluid is expressed from the solid substance and drained through a dampened filter. The meat is again mixed with water and digested for 4 hours at the same temperature, afterward pressed and filtered. Both decoctions are put into a single vessel and over the waterbath are evaporated to the consistency of syrup. The meat itself, which has already passed through two processes of extraction, is once more macerated in four times its weight of 95 per cent. alcohol for 12 hours, and the liquid portion, after filtering, distilled.

The water remaining after the distillation contains strychnine united with sulphuric acid, together with extractives and sulphates of the bases kreatin, kreatinin, etc. By agitating the acid solution with petroleum ether, a small portion of the extractives are removed; lastly, the acid liquid is rendered neutral by adding ammonia, and the liberated bases taken up by chloroform, but is always contaminated with a large quantity of the aforementioned basic bodies, which are by no process separable. (It would doubtless be interesting to apply the stas-otto method of extracting, with alcohol and tartaric acid, with the view of securing the alkaloid in a pure state.)

Sheep I.—750 grms. of muscle was exhausted according to the above method. The chloroform solution showed a plain though not very strong reaction of strychnine (blue color with potassium dichromate and sulphuric acid). The evaporation of the chloroform was followed by the precipitation of so much extract matter that no reliable result respecting the weight of the drug could be reached.

The substance of the liver, weighing 400 grms., was treated in the same manner; the chloroform solution showed strong reaction of strychnine; also abundant extractions which were inseparable.

Sheep II.—500 grms. of muscle was similarly subjected, and the chloroform showed a strong strychnine reaction. The liver, weighing 300 grms., also tested with Dragendorff's method, gave a materially weaker reaction.

PHYSIOLOGICAL EXPERIMENT (WITH WHITE MICE.)

I. The liver extract from sheep No. 1. One-half of this subcutaneously injected, and in ten seconds death occurred under symptoms of tonic and clonic spasms. A second mouse, which received but one-tenth of the extract, manifested light muscular contractions and increased reflex excitability after the lapse of five minutes; in seven minutes spontaneous contractions were observed, and in eight minutes after the injection the animal died in clonic-tonic contractions.

II. Liver extract from sheep No. II. Mouse received one-tenth of the liquid, and after two minutes appeared excited; after four minutes the same jumped when the table was struck; fifteen minutes after, there appeared light muscle contractions; in nineteen minutes death supervened under clonic-tonic spasms. The second mouse was given two-tenths of the extract and in two minutes was excited; four minutes after is, strange enough, quiet and immobile; six minutes after, eyes closed and seemed ill; ten minutes slight contraction; sixteen minutes after, death under clonic-tonic convulsions. In both mice thirty seconds before death the tail was stiff and held upward, as though in opisthotonoid contraction.

III. Muscle extract sheep No. I. In six minutes after the reception of one-tenth of the fluid, the mouse showed some excitement. Second mouse received two-tenths of the same, and in seven minutes appeared frightened when the table was struck; in twenty minutes after both were easily frightened; twenty-six minutes after, individual contractions; forty-five minutes contractions progressing and great fear present; seventy-five minutes after, both animals crouched and apparently ill; in two hours after, both ate bread; three hours, behave naturally, and are frisky; during five hours of continued watching they maintain appearances of health, and on the next day showed themselves as well as previous to the injections.

IV. Muscle extract, sheep No. II. Animal received one-tenth of the extract, and in nine minutes died. The second mouse was given two-tenths and in eight minutes was also dead.

V. The remaining muscle extract was mixed with 30 ccm. of water and injected into a dog weighing ten kg. No sort of working could be differentiated, and after one hour the same was lively and free of any symptoms of a toxic nature.

EXPERIMENT WITH ESERINE.

A wether weighing thirty-two kg. received 0.5 grms. of eserinum sulphuricum; death resulted in thirteen minutes.

A half pound of the meat, as well as the bouillon therefrom, was eaten by us without injury or any characteristic symptom. The three dogs, already mentioned, each received one kilogram of the raw flesh, which they ate with avidity and subsequently showed no unusual signs, not even contraction of the pupil.

CHEMICAL ANALYSIS OF THE FLESH.

This embraces I. Muscle, 1750 grms.; II. Liver, 500 grms.; III. Throat, lungs, kidneys, blood, etc., 1000 grms. The procedure was as in the analysis of meat poisoned by strychnine, except that the easy decomposing nature of the alkaloid under consideration necessitated particular care. The digesting process was carried out in a darkened chamber, away from the solar rays, and the temperature of the water-bath did not exceed 30° to 35° . In filtering, we noticed a peculiar red color of the filtrate, which indicated that at least part of the eserine had been oxidized to rubreserine. The evaporation of the filtrate, and the distillation of the alcohol were conducted on a bath of 100° . It is hardly necessary to state that also in this chloroform solution considerable quantities of extract matter were separated. Upon testing we discovered not the least trace of eserine in the liver and muscle; on the contrary, the blood, etc., showed distinct eserine reaction. The test of Eber was applied, and is as follows: a drop of the suspected solution was put upon a porcelain dish with a drop of barium oxidum in solution, and immediately a red color appeared; after drying, the drop turns blue at its periphery (physostigmine blue), this blue disappeared with the production of the original red when water was brought in contact with it.

After the chloroform containing the free eserine was evaporated, the Eber test was applied without the faintest tint of color, the test was negative; after drying, however, the same showed a plain blue on the outer edge, and when water was brought into contact with it the characteristic red color made its appearance.

After two days the reaction was weaker, and after

four days it could not be obtained ; the eserine had been decomposed. We are unable to explain why, in the second test, the union of the barium oxide solution, and solution of eserine, was not marked by the production of the color ; perhaps in the case before us the dilution was too great.

In any event the subsequent reaction, namely, the blue coloring after drying, and the red coloring after moistening, can be accepted as conclusive proof of the presence of eserine.

REPORTS OF CASES.

IS THIS ANTHRAX?

BY DR. D. P. FRAME, V.S., Colorado Springs, Colo.

During the last three weeks a very peculiar disease has broken out in two or three herds of horses in this vicinity. It has proved fatal in every instance, many of the animals being found dead in the pasture.

Those animals which I have seen alive, present about the following symptoms:

Pulse, 75 to 100, very irregular, now full and strong, again almost imperceptible, and finally becoming very weak and fluttering; temperature, 102.5 to 103.° F.; respiration, labored; visible membrane of an intense dirty yellow, conjunctiva covered with dark petechial spots, breath very offensive.

Sometimes a slight watery discharge from the nose, general condition good, but not high; great constitutional depression and languor, with a general desire to remain quiet. No colicky pain is manifest.

There are no external swellings of any of the glands of the head, throat, or body, or of the tongue, and no crepitation of the skin has been observed during life. In all cases a peculiar sore breaks out on one or more of the feet, an exudate comes through the skin, usually on the coronet at the side of the foot, rarely in the heel, the skin dries and cracks, and blood oozes through. When washed the skin has an angry red look.

The appetite is lost in those cases that have been observed, the bowels remain nearly or quite normal, though usually a large amount of urine is voided, which is of a dark red color. The animals live from two to three days, after first being noticed sick, and die without a struggle. About fifteen animals have died of all ages from a yearling colt to a fifteen-year-old mare, including three young mares, suckling colts. Some were found dead in the pasture, and so badly decomposed that post-mortem was impossible.

I have made several post-mortems, of which I report the following:

No. 1.—Three-year-old filly, found dead in pasture, had probably been dead twelve to eighteen hours; had been in good condition, no external marks of violence; rigor mortis slight. Sore on near hind foot; removed the skin, and found subcutaneous tissues somewhat inflamed and blood in vessels liquid; some extravasation of blood into the tissues; no swelling up the leg or of any of the glands. In opening the body many hyperæmic or congested spots were observed in the abdominal muscles, some of these being quite extensive.

Abdomen.—The stomach contained only a small portion of food, with a small amount of bloody liquid, intense inflammation over the villous portion; bowels below the stomach were much congested, and aside from some liquid matter in them, they contained a large amount of a jelly-like mass of colloid infiltration between the muscular and mucous coats.

Colon covered with petechial spots on serous surface and much congested on mucous surface. Mesentery most intensely congested, though the bowel itself was not much affected; congested spots over peritoneum. Liver very much inflamed, hard and tense to the touch, but easily broken down; when cut across, the cut surface presented a dirty yellow appearance and left a yellow exudate on the knife. Spleen enormously enlarged to fully five or six times its normal size, and filled with a black, tarry-looking blood in liquid state, structure very friable. Kidneys, right one normal, left one congested and showing numerous black spots. Bladder empty.

Thorax.—Lungs covered throughout their entire substance

with hyperæmic spots, which along the larger bronchi had broken down the lung tissue, and the blood had exuded into the air passages, which were consequently filled with foamy blood. Some pleurisy on right side.

Heart partly filled on both sides with dark liquid blood; cardiac vessels enormously engorged, the auricles presented a number of congested spots. Inside in both cavities were a large number of congested spots with a considerable amount of congestion in the mediastinum, and about the lower part of the heart. A considerable quantity of very bloody liquid was found inside the pericardium, and the membrane presented many congested spots. The muscular tissue of the heart was easily broken down.

All the blood-vessels of the body were more or less filled with liquid blood; no clots were found anywhere. The blood, while very dark in color, presented a peculiar wine color as well; and this dark—almost wine color—and fluid condition of the blood was characteristic of all these cases.

Brain presented a few petechial spots on surface and engorgement of all blood vessels.

This filly was seen alive and apparently quite well, though a little dull, on Friday afternoon, and was found dead on Sunday morning.

No. 2.—Mare fifteen years old, was sick when No. 1 was found dead, presenting symptoms described above. In this case large doses of hyposulphite of soda were given in drench three times a day. For three days she appeared to improve, then gradually sank and died eight days after first symptoms appeared.

Post-mortem.—Eighteen hours after death, rigor mortis slight, sores on two feet, one hind and one forward, also same kind of sore on the nose. Large emphysematous swelling on right side of the neck just in front of the shoulder, which when opened presented a blackened, disorganized condition, which extended down under the shoulder. In this swelling, which extended over a space eight to twelve inches in diameter, there was considerable extravasation of blood into the connective tissues.

On opening the body, very nearly the same lesions were found as in No. 1, except the stomach, which was quite full of partly digested food. Villous coat more congested than No. 1, and the same hyperæmic spots in the muscles. Intense inflammation of small bowels with colloid infiltration between mucous and muscular coats. Mesentery intensely congested; spleen not so much enlarged as No. 1, yet three times its normal size, and loaded with black, tarry-looking blood. Liver much inflamed and structure easily broken down. Kidneys, left one normal, right most intensely congested, with some patches of inflammation. Bladder empty. Lungs entirely covered with petechial spots, right one much congested in its lower half and showing small collapsed patches. Heart contained a small quantity of black, liquid-looking blood and presented many congested spots in both cavities and about the auricular portion. Its structure was easily broken down. Fluid in pericardium very bloody and abundant in quantity. No clots were found anywhere. Brain not examined.

This animal had fallen on the left side in death and had never been turned over.

No. 3.—Gelding ten years old, good condition, first seen June 28th, 5 P. M. *Symptoms*.—Pulse, 90°, very irregular; temperature, 103° F.; visible membranes intensely brownish-yellow, with many petechial spots on conjunctiva; breath very offensive; bowels torpid, very high colored urine passes in quantities; sores on all four feet and in angle of one hock. A peculiar twitching of external intercostal muscles was observed on both sides. Animal very weak, dragging his feet and staggering as he walked. Died without a struggle sixteen hours later. No treatment.

Post-mortem.—Four hours after death rigor mortis very slight. On opening the abdomen, numerous large, congested spots were observed in the abdominal muscles, and on removing the skin, the muscles of the right side of the back were congested and black, with much extravasation into all the connective tissues.

Abdomen.—Stomach full of partly digested food, villous portion intensely congested in spots. Small bowels very

highly congested on mucous surface and intensely infiltrated between mucous and muscular coats, with the same jelly-like matter common to Nos. 1 and 2. The colon presented a marbled or spotted appearance over its entire serous surface, so thickly was it studded with petechial spots. The mucous surface presented a blackened, disorganized appearance. Mesentery intensely congested and hyperemic spots over entire surface of peritoneum. Liver hard, hyperemic, very friable, and much enlarged. Capsule easily torn away. Liver when cut across presented a dirty yellow appearance, and left a yellow exudate on the knife. Spleen enormously enlarged and engorged with black liquid blood which showed a tendency to gravitate to either end when the other end of the organ was elevated. No means were at hand for weighing, but this spleen would certainly weigh twenty pounds; it measured twenty-two inches across the base, thirty-one inches long and six inches thick. Kidneys, left one congested, right normal. Bladder empty. Hyperemic patches over peritoneum.

Thorax.—Lungs thickly studded with petechial spots, which covered pleura as well, large patches of lung tissue collapsed, and all large bronchi filled with foamy blood.

Heart.—Pericardium presented many congested spots, and the contained liquid was very abundant and quite bloody; cardiac vessels engorged with liquid blood, and heart most intensely congested in both cavities, and about auricles. Structure very friable, small amount of liquid blood in both sides of heart; no clots anywhere. Intense congestion and infiltration in mediastinum.

Brain.—All vessels much engorged with liquid blood, and a few petechial spots on surface.

The post-mortem appearances of this animal were much more violent than any of the others; he was sick about sixty hours. Other post-mortems were made, which presented practically the same lesions as above.

I had no microscope at hand with which to make examinations of Nos. 1 and 2. Microscopic examinations of the fresh blood from spleen of No. 3, with a power of 350 diameters, showed numerous, straight, rod-like bacilli, motionless, with

rounded ends, and about three millimetres in length. The same specimen, under a one-sixth objective with one-inch eyepiece, showed the same bacillus in the form of numerous bead-like cells, enclosed in one common sheath. No means were at hand for cultivating.

REMARKS.—All of the animals affected have been out of doors on the ranges all the winter, and while they were not poor, yet their systems were in a debilitated, depleted condition in the spring. During May and the early part of June we have had an abundance of rain for this climate, which has brought up a luxuriant growth of grass on the pastures; and these horses, while not in high condition, were thriving and gaining quite rapidly. Only a small portion of the land is low, most of it being high, rolling prairie, some of it hilly, and all with a sandy, porous soil. The water supply is pure on these pastures. The altitude here is about six thousand feet. These animals died in three pastures about five or six miles apart, and all at about the same time, from June 15 to July 1st. No deaths have occurred since July 1st.

No disease has been known on these pastures in the past, though both places have been used for years for cattle. In one case, cattle were removed and horses turned in there about a year and a half ago; in another, horses have never been ranged there until this spring.

All of these dead bodies have either been burned or buried, and in all but one instance the horses removed to another pasture.

I report these cases, with this much of detail, hoping that by so doing we may gain some knowledge of the cause, what this disease is. Reasoning from the symptoms, and post-mortem appearances, with the history of the cases, we have called it anthrax. I have no record of anthrax in horses having existed in this section.

LACERATED, CONTUSED WOUND, WITH DIVISION OF THE CAROTID ARTERY, JUGULAR VEIN AND PNEUMOGASTIC NERVE.

BY J. E. BROWN, V.S. Oskaloosa, Iowa.

The victim was a three-month-old colt horned by a Jersey bull, on July 27th, 1890.

The horn penetrated the skin just inferior to the groove containing the artery, vein and nerve, about fourteen inches posterior to jaw, and with an upward, rotary movement divided the vessels and lifted a portion of each from their place.

About ten inches of the carotid artery, divided anteriorly to the wound, was left hanging, ten or twelve inches of the pneumogastic nerve divided posteriorly to the wound, and five or six inches of the jugular vein divided posteriorly to the wound, were in the same condition.

The artery, from the straining and tearing of its walls, immediately plugged itself, but from the vein the hemorrhage was profuse. The owner of the horse was at hand, but could not get to it until it sank down, and then grasping the divided end ligated it with a thread.

I was immediately sent for, and on arrival, some thirty minutes later, found the colt again on his feet, but very weak, respirations quick and shallow, the eye on side of the injury was closed, and no effort or no power to raise the lid.

After using some stimulants internally, I drew the blood vessels out until their walls seemed healthy, and ligated them with carbolized catgut, cut off the injured portion, two inches of the artery and nerve, six of the vein, and after suturing the outside wound with silk and using carbolized dressing healed nicely.

I have had frequent opportunities of examining the colt, which is now over one year old, and seems to enjoy as near perfect health as any other animal; runs as fast and plays as much, and with as little fatigue as any other colt in the pasture; manifests no inconvenience from the accident or its results. The eyelid still droops somewhat, and the side of the head is not developed in proportion to the other. The pulse, as noticed in the sub-maxillary artery, lacks in volume on this side.

The respiratory sound in the lung and on the injured side has gradually weakened from the time of injury, and at present very little, if any, murmur is audible. The murmur in the opposite lung is very loud, and it is impossible to determine whether the slight sound noticed on the injured side comes

from the lung of that side or the healthy one. However, it is an evident fact that the lung from which the pneumogastric was shut off has become greatly weakened, and the opposite one strengthened.

AMAUROSIS IN A FILLY DEPENDENT ON ŒSTRUM.

BY DR. F. HARVEY, D.V.S., Raleigh, N. C.

I submit the following case with the hope that it may prove interesting on account of the rarity of its occurrence in veterinary practice, as, although I find it mentioned in our text-books in connection with pregnancy, or as a result of castration, yet I can find no mention of its occurrence during œstrum.

On April 30th I was called to see a two-year-old filly which had until that day been in perfect health.

The history of the case was that the filly had been discovered to be in heat that morning for the first time, and in the afternoon in walking about the yard, it was noticed that she walked into objects, being altogether unable to see. She also had an excessive discharge per vulva.

When I saw her at first I could detect nothing abnormal about her eyes, but on closer examination, I found the pupils dilated and fixed. The near eye was more affected than the off. She was very much excited, and when her hind quarters would come in contact with an object she would kick violently.

I ordered her to be kept quiet, using no medical treatment.

On May 2nd the discharge stopped, and the sight began to return, and when I saw her again on the 6th, she could see perfectly, and was otherwise in good health.

INGUINAL HERNIA IN A GELDING.

By L. L. CONKEY, V.S., Grand Rapids, Michigan.

In the April number of the VETERINARY REVIEW, page 44, of 1891, Dr. R. T. Whittlesey, of Los Angeles, California, asks if

any member of the profession has ever seen a case of inguinal hernia in a gelding, strangulated or otherwise.

As I have not only seen, but successfully treated both, I will give a sketch of two cases, as per note taken at the time of the operation.

On the 29th day of August, 1887, I was called by telegram to see a bay gelding six years old.

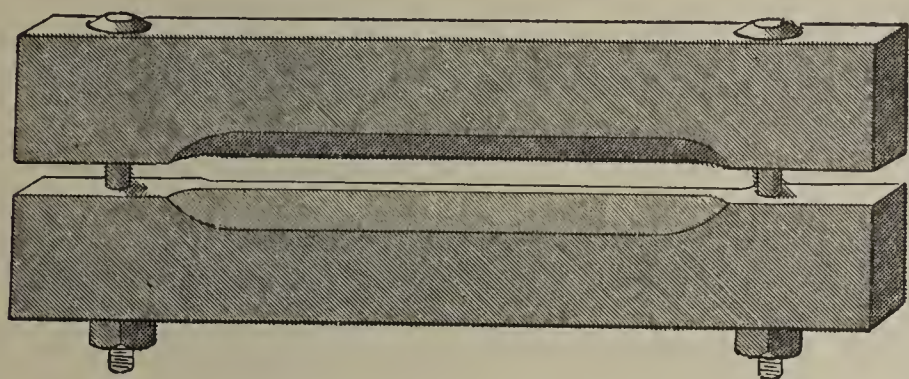
On my arrival I found the horse lying on his right side groaning or grunting loudly at every breath. Pulse not much altered. Temperature normal, in consequence of which I looked for local trouble of the left scrotum.

The owner, Mr. Graham, said the horse had been castrated five years previous; however, I got the horse up and made an examination per rectum with my right hand and arm, when I could distinctly feel the imprisoned bowel, but was unable to remove it by manipulations and taxis. The animal grew worse, and soon began throwing himself about violently for perhaps an hour, during which time I was trying to persuade Mr. G. to allow me to operate by incision, to which he finally consented; by this time about four or five feet of the intestine had come down and the tunica vaginalis had become ruptured anteriorly, so that the bowel lay down along the sheath. Leading the animal to a hillside near by, he soon lay down, when I secured him with ropes; placing him with his head down hill, I made a free incision through the scrotum, and with a probe-pointed bistoury enlarged the inguinal ring, after which I had but little trouble in returning the bowel. I dressed the wound with iodoform, then filled the crural and whole space that had been occupied by the bowels with cotton batting, pressing it well up against the abdominal wall, then placed four sutures through the skin to hold the cotton in place, and let the animal up. He walked to the water tank, took a drink, then trotted into the stable of his own accord. On the fourth day the sutures were removed and the cotton dropped out, the wound healed by granulation, since which time the animal has enjoyed apparently good health, being smooth and free from hernia.

Case No. 2.—Iron gray gelding, three years old, the prop-

erty of Mr. Benjamin Van Raalte, of Holland City, Michigan. I was called to see this horse, April 14th, '90, found a large hernia on the right side, the size of a man's head, and a smaller one on the left side; the animal was in prime condition aside from the deformity caused by the hernia, which seemed to cause him no inconvenience; "but he is worthless," said Mr. Van Raalte, "unless the rupture can be cured."

I took two pieces of dry oak wood, seven inches long by



one inch square, beveled the inner edges and bored a quarter inch hole in each end for bolts as shown by the accom-

panying engraving. I laid the horse on the left side and carefully returned the bowels, then I applied the clamp around the old spermatic cord, clamping in all the loose tissue that I could handily, placing the clamp well up in groin or crural, tightening the bolts just enough to prevent the clamp from moving and let the horse up. Four days later I tightened the bolts a little, and in two more days I turned the burs as much as I could; the clamp sloughed off ten days later and in two weeks the animal was well. I then laid him down and operated on the other side in a like manner. The animal has since recovered, and I have operated on a goodly number of stallions for scrotal hernia by dissecting out the tunica vaginalis and placing a clamp well up against the abdominal wall, and allowing it to slough off.

June 23d, '91. I was called to Wayland, Michigan, to see a three-year-old gelding with *inguinal hernia*. The bowel protruding from both sides to an enormous size. The animal, although sixteen hands high, rangy trud, with plenty of bone, muscle, and action, was bought for \$30, showing that he was comparatively useless in his then unsightly condition.

I operated on him, using the bolted clamp as already described, except that I operated both sides at the same time, but I have not heard from him since the operation. However, I

think that a good omen, as in the veterinary practice a dead horse travels about nine miles to a live horse's one.

SUCCESSFUL OPERATION FOR THE CURE OF LARYNGISMUS PARALYTICUS, OR ROARING IN THE HORSE.

BY T. S. BUTLER, V.S., Minneapolis, Minn.

While in Appleton, Wisconsin, last summer on a pleasure trip, I was requested to operate on a horse for the cure of the above mentioned disease.

The subject was a draft stallion about ten years old, which was almost worthless in his present condition without wearing a tracheotomy tube all the time. He was driven from Oshkosh to Appleton, a distance of twenty miles, to the stock sale to be disposed of.

Three friends of mine (viz.), Drs. Kaurtz and Mack, and Mr. Johnson, purchased the animal at a small figure for the purpose of having him operated on. He was the worst roarer I ever saw, could not travel the distance of a block at a slow trot without falling unless the tube was kept in the trachea. He was operated on according to Dr. Fleming's method as laid down in his work on the subject, and at the end of six weeks, when the wound had completely healed, he was put to work on a dray in town, doing his work nicely without roaring, then was sold and taken to the lumber wood in the northern part of the State, where he worked all winter on a logging sled, hauling seven miles to the landing without roaring a particle and without wearing a tube. Anyone who has witnessed the loads they are compelled to haul can testify that the work is very hard.

I have been informed by several parties who worked in the same camp that he did his work as well as any of the other horses without roaring and still continued sound.

I have operated on seven cases thus far with the following results: Four complete recoveries, two partial and one failure. The best results have been obtained in the operations on draft horses.

Several articles have been written in this and the European countries condemning the operation, but, while it has not always proven successful in my hands, yet the percentage of recoveries are sufficient to warrant me in advising the operation when the animal is worth the expense of the trial.

There is no operation that always terminates successfully, and as this disease frequently renders the animal worthless, consequently the operation should be tried, and if not always successful will very seldom leave the animal in a worse condition than he was prior to the operation.

I should be pleased to hear the results of others on this subject through the columns of the REVIEW.

AMERICAN VETERINARY COLLEGE.

HOSPITAL DEPARTMENT.

A COMPLICATED CASE OF VARIOLA EQUINA.

By E. NESBITT, D.V.S., House Surgeon.

March 28th we were called to see a medium-sized chestnut gelding about five years of age, and the history of the case, with its subsequent developments, will, I think, be sufficiently interesting to entitle it to a small space in the REVIEW. The horse had been used for ordinary light driving purposes, and had been ailing for a day or two before we were called, refusing his feed, appearing dull and coughing occasionally. Upon examination, we found his temperature to be 106°F., pulse 60, respiration very much accelerated, non-flexibility of loins, extremities slightly swollen, and the visible mucous membranes were very much congested. On auscultation, harsh mucous rales were heard, and on percussion, resonance was obtained. The case was diagnosed as one of bronchitis, and the following mode of treatment adopted. The extremities were bandaged; quinine sulphate was given three times a day in the form of two-drachm balls.

After the fever had been got under control we administered stimulants and the patient began to improve; tempera-

ture became lower, pulse less frequent, respiration easier, and he commenced to take food. The improvement continued for four or five days, when suddenly a change was noticed. The horse again refused his feed, would or could not drink, his temperature and pulse increased, the former to 105°F. , respiration became slightly accelerated. Pressure over larynx resulted in a fit of coughing and caused the horse much pain. He had laryngitis, and for treatment a stimulating liniment was applied to the throat, with electuaries administered during the day. The bronchitis subsided gradually and left him suffering from laryngitis, from which he was rapidly recovering when a second change was noticed; increase in temperature, quickening of pulse and respiration, and loss of appetite. Heat and swelling were observed in the region of the parotid gland and intermaxillary space. Abscesses, six or seven in all, formed in these regions; one, especially large, situated at the upper extremity of the parotid gland just at the base of the ear, when opened discharged about an ounce of purulent matter. After a few days' treatment, these abscesses began to heal and the patient once more improved and was getting along nicely when again a change for the worse was observed. Again pyrexial symptoms appeared, and when an examination was made of the lips we were surprised to find both inside and out of the upper and lower lip patches of eruptions characteristic of variola equina. These patches were more developed on the lips, but could be found scattered over the surface of the body, and on the neck under the mane. We subjected the animal to a course of tonics, when he again improved, but only for a short time, for a sudden and more serious complication had presented itself. The temperature had risen to 105°F. , pulse and respiration quickened. The mucous membranes, this time, were the agents that told us what malady had seized the poor animal. These membranes were covered with patches of petechia that are characteristic of purpura hæmorrhagica. The membranes of both nostrils were covered with them, and the conjunctiva of the left eye presented a small patch of the spots. By this time the animal was very much debilitated and the owner de-

cided to send him to the hospital. He was placed in a large, loose box and carefully watched. His temperature dropped and large swellings appeared all over the body. The fore legs were very much swollen—the knees would measure thirty inches around. A large pendulous swelling appeared on the median line under the abdomen and thorax. In the inguinal region also appeared large swellings.

The swellings of the head were interesting. On the right side it was so great that it nearly closed the passage and caused respiration to take place almost wholly through the left side, which also was somewhat swollen. The appetite was poor at this time and a fatal ending was justly apprehended. The patient, because of the enormous swellings and extreme weakness, could hardly move, and when urged to do so in the stall, much inconvenience was experienced. Gradually the petechia in the nose and eye disappeared and the swellings slowly subsided. His appetite began to return and slowly he regained his former normal condition, and yesterday, May 18th, he went away to the country to enjoy the blessings of freedom in an open field for a short time. Our treatment for the last complaint may be worth special mention. We gave him eight ounces of very strong coffee; in this we put, at first, one-half of a grain of sulphate of strychnia and gradually increased the same to one and one-half grains at a dose. This was given him every four hours. Besides this, we administered one ounce of potassium nitrate three times a day in the drinking water. The result was, as stated before, a complete recovery. This was indeed a queer series of afflictions, beginning with bronchitis and continued by laryngitis, adenitis with the formation of abscesses, variola equina and ending with purpura hæmorrhagica, which was the most serious of all.

EXTRACTS FROM FOREIGN JOURNALS.

WOUND OF THE CAROTID IN A HORSE.

By M. VAN AUTGARDEN.

In this case the operation of bleeding the horse, which had been confided to a blacksmith, was followed in the course of

an hour by the formation of an enormous tumor, occupying the entire extent of the jugular groove, and pressing so forcibly upon the trachea as to give rise to such a degree of roaring as to seriously threaten the life of the patient.

Tracheotomy was immediately performed, and the escape of the largest part of the extravasated blood through the wound was accomplished.

The flow then began to diminish, and soon after ceased entirely. The carotid had been closed by the pressure of the infiltrated blood. The animal recovered in a few days.—*Annales de Belg.*

NEW MODE OF GASTROSTOMY IN CATTLE.

By Mr. BAERTS.

The method adopted by the author is a simple one, and possesses the great advantage of preventing the entrance of alimentary substances between the layers of the abdominal muscles within the peritoneal cavity, thus preventing the possibility of abscesses, or of peritonitis. It consists in the application around the wound of two bands or cords, about the width of the hand, or of the part to be protected, upon which an assistant, placed on the right side of the animal, maintains a continuous and strong traction.

The incision of the skin, of the muscles and of the rumen is then made in the space between the two bands. The contents of the stomach are at once expelled, with a force varying with the traction made by the assistant, which has also the effect of compressing the distended abdomen.—*Ibid.*

ŒSOPHAGOTOMY IN THE DOG.

By Mr. F. HENDRIX.

This operation, although it is comparatively a simple one, is generally considered serious on account of the septic complications which may follow it. But in these two cases the author had recourse to the application of antiseptic measures, and he attributes his success to this fact. In the first case, a small greyhound had the œsophagus obstructed by a

rounded piece of bone, and the pressure produced by the foreign body upon the œsophageal mucous membranes, added to the fermentation of the food and saliva arrested in the canal, had given rise to a complete gangrene of the membrane. Notwithstanding this complication, the operation, followed by repeated phenicated washes, resulted in a rapid cicatrization, and after three weeks in a complete recovery.

The subject in another and similar case was a street dog, in which a piece of cartilage had given rise to nearly the same lesions. A similar operation, with the same antiseptic precautions, was followed with the same result.—*Ibid.*

BLISTER OINTMENT WITH CORROSIVE SUBLIMATE.

By Director DEGIVE.

Taking into consideration the peculiar vesicating and alterative properties of the bichloride, the author recommends the following mixture for the attainment of the desired results: of sublimate and pulverized cantharides, equal parts; 15 grammes for a strong mixture; 10 grammes for one of ordinary strength; both thoroughly mixed with 100 grammes of vaseline. Directions for use: shave the hair from over the part where the application is to be made; rub the ointment well in for ten minutes; six hours after, lay over it a single layer of the ointment. The maximum of strength is exhausted after twenty-four hours. However severe the effect may be, there is but little subsequent blemish left.—*Ibid.*

UPON THE DIAGNOSIS OF TUBERCULOSIS BY EXAMINATION OF THE OCULAR HUMORS.

By M. L. MANDERAU.

Early diagnosis is one of the principal points in veterinary practice, and sometimes equally desirable and difficult, but the observations of the author seem to promise the removal of a large portion of the difficulty, if not in all, in at least a large proportion of cases, whatever may be the extent of the lesion, or its location in the diseased animal. According to

Mr. Manderau, the microscopic examination of the aqueous humor of bovines has demonstrated the presence of the bacillus of Koch in cases of generalized tuberculosis, as well as in those in which only the lungs or the liver were the seat of tubercular lesions.

The process is simple: the animal being kept quiet, and the eye rendered insensible by cocaine, the cornea is punctured with a sterilized pipette, which is introduced parallel to the axis of the iris, and a sufficient quantity of the humor collected for the purpose. The operation is easy to perform, and is not usually attended with accidents or complications.—*Soc. de Biologie*.

FILARIA OCULI IN A PARROT.

By G. W. W.

Early in last May, the attention of the author was called to a young grey parrot, the owner of which had for the last three months observed a small thread like worm darting about in one of its eyes. At first it seemed to give some inconvenience to the bird, and he frequently rubbed his eye with his claw, but latterly he seemed to have become accustomed to its presence, and ceased to give it any attention. The worm had grown steadily since its first appearance, and at the time of examination must have been at least half an inch long. The owner having decided not to subject the bird to an operation, no treatment was applied. The worm finally died, and could afterwards be seen in the bottom of the anterior chamber. There was at that time a slight inflammation of the iris, manifested by a reddish tinge, and the contents of the anterior chamber were not quite so clear as in the normal eye. When last observed, three months afterwards, the worm was still in the eye, in much the same condition as when noticed two or three weeks after its death.—*Veterinary Record*.

PARALYSIS IN A HORSE DUE TO A TUMOR ON THE SACRO-SCIATIC NERVE.

By W. J. MORAN, M.R.C.V.S.

This is the case of a cob which was reported as having become suddenly ill. When seen by the author he was sitting

upon his haunches, apparently in good health. Pulse and temperature were normal, but all attempts to make him stand upon his hind legs were useless. No informations could be obtained touching the origin of the injury. External and internal examination revealed nothing.

The floor of the stable being of asphalt, it was surmised that he might have slipped in the act of rising or turning, and in that manner sustained the injury. He was strong, and received a dose of aloes, and his back and quarters were blistered, but nothing availed, and after eight days he was destroyed.

At the post-mortem a tumor weighing seven ounces was found lying on the left sacro-sciatic nerve, as it passes over the ilium. It did not appear to be connected with the nerve, but was firmly attached to the surrounding cellular tissue between the muscles. No examination could be made as to its nature. — *Ibid.*

OPERATION FOR STAPHYLOMA.

By E. A. HOLLINGHAM, M.R.C.V.S.

The subject was a Persian cat, a very intelligent animal, and a great favorite of the owner. The cornea protruded between the eyelids in the form of a roughened tumor, the size of a Barcelona nut. All forms of treatment had failed, even to partial incision, followed by caustic. The eye and its membranes were much inflamed, and the use of atropine reduced it, but had no effect on the growth.

As the removal of the entire globe would disfigure the poor animal too much, it was decided to remove simply the diseased cornea, and endeavor to obtain a stump, to be composed of the sclerotic, the lens and the vitreous humor, and the operation was performed as follows: The cat being chloroformed and the eyelids dilated, three fine curved needles, armed with silk, were passed from above downwards, well behind the seat of the disease and in front of the lens, and the tumor removed, and, of course, the contents of the anterior chamber with it, the needles during this time acting as a bar to the escape of the lens. The needles were then successively

drawn together and the silk tied. The wound healed well, and to a casual observer the animal simply appears to be wall-eyed.—*Ibid.*

PUNCTURE OF THE COLON THROUGH THE RECTUM.

BY MR. IMMINGER.

Five hours after her evening meal, a mare eighteen years old was taken with colic and tympanitis. She had eaten green clover in the afternoon. The intestines were full of gas, and the pelvic curvature of the colon was distended and pushed in the pelvis. By puncturing the cœcum, the tympanitis had disappeared entirely; yet a rectal examination proved that the colon was still largely distended. The animal was then well rubbed and walked, and received ten centigrams of eserine. The next day the tympanitic condition had returned, and another cœcal puncture was made, and still the colon was distended, and it was then that the puncture of that organ through the rectum was decided upon. The rectum being disinfected with a solution of bichloride of mercury, the author introduced one hand into its cavity, while with the other he guided a trocar, the point of which was guarded with a cork. The place of puncture once secured, the operation was completed. It was followed by another escape of gas, and a new injection of eserine was followed by recovery two hours later.—*Wochenschrift für Thierheilkunde.*

CONTINUED IRRIGATION IN DISEASES OF THE WITHERS.

BY MR. C. HAASE.

A gelding, five years old, had in front of the withers, on the left side, a painful swelling, in the center of which was a small wound, which discharged a large amount of thin, grumous pus. This wound formed the opening of a fistulous tract, running obliquely downward and forward, in a direction parallel to the second dorsal vertebræ.

The tumor was opened by two large crucial incisions, and the following treatment adopted: repeated washings with warm water, and injections of two per cent. phenic solution, made as often as possible.

Notwithstanding this treatment, carefully followed, the diseased process continued to increase. At four different times, new incisions and counter openings were made; portions of the ligamentum nuchæ were removed; and drainage tubes were used, and yet the necrosis continued to extend.

It was then that a system of continued irrigation was started, and a stream of warm water, regulated at will, was directed on the wound. At first the liquid filled up the gap of the wound, but it soon began to overflow, carrying with it the pus and other diseased structures, and two days after the entire surface was covered with healthy granulations. After a few days the irrigation was discontinued, and the animal recovered in a short time.—*Berliner Thierärztliche Wochenschrift*.

THE APPLICATION OF KOCH'S METHOD IN THE DIAGNOSIS AND TREATMENT OF GLANDERS.

Recently German veterinary journals brought the news that Prof. Kalning, of the Veterinary Institute in Dorpat (Russia), succeeded in preparing a fluid from cultures of the glanders-bacillus, according to the preparation of Koch's tuberculine. He named the fluid *mallein*, and reported that its injection produced a marked rise in temperature in horses diseased with glanders, a reaction which did not occur in healthy horses. He concluded that he had found a diagnostic agent for the differential diagnosis of glanders.

Now comes the sad news that Prof. Kalning infected himself in these experiments, and died of septicæmia.

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening, May 27, 1891. President L. H. Howard in the chair.

Members present: Drs. Billings, Blackwood, Emerson, Hadcock, Hitchings, Howard, Lee, Skally, Winchester, Winslow, and the Secretary. Honorary member, Dr. Stickney. Visitors: Dr. F. M. Perry and Mr. Andrew Ward.

Minutes of the previous meeting read and accepted.

The secretary was instructed to look up the attendance of members during the past year, in order to decide who is to receive the rasp offered as a prize by Dr. Lee for the best attendance.

Dr. Winchester suggested that the by-law requiring a thesis from candidates for membership be rendered inoperative for three months. It was found that in order to do this the constitution would have to be amended. Dr. Winchester thereupon withdrew his suggestion.

Motion made by Dr. Winchester that the Secretary notify all veterinary graduates in Massachusetts of the existence of the Association and invite them to join. Seconded by Dr. Winslow. Carried.

Moved by Dr. Winchester, that two hundred copies of the constitution be printed. Seconded by Dr. Winslow. Carried.

Papers and discussions : Dr. Billings was called upon by the President to address the Association. Dr. Billings delivered an address, a synopsis of which is given as follows :

He prefaced his remarks by saying that he felt he was among his friends, and that he would have renounced his title of veterinarian long ago if it were not for the fact that he was a member of the Massachusetts Veterinary Association. He then spoke briefly of Clark University, at Worcester, and said that some of his friends there would be happy to make a scientific investigation of the spinal cords of the horse which Dr. Howard had sent to Ward's Wharf for the members of the Association to examine, the animal having an exaggerated form of springhalt.

He then proceeded with the main topic of his discourse, saying that the Massachusetts Veterinary Association must do all in its power to push the profession forward in this State. If we put our shoulders to the wheel, he thinks we can accomplish a great deal for the advancement of our profession. One way to do this was to secure provision from the next Legislature to appoint a scientific veterinarian, at the State Experiment Station at Amherst, for the investigation of the infectious animal diseases. He thought that the State ought to be willing to appropriate \$15,000 for this work. What we want to do is to start this work at Amherst, and show the people that the veterinary profession amounts to something. In Massachusetts we may not have exactly the same conditions as in the West, but we have work here to do, if we can only get a start, and make a centre at Amherst, with the profession back of it. If we only had a place in Massachusetts where we could refer our doubtful pathological questions, it would help advance our profession more than anything else. What we want is to have our profession send in a strong petition to the Legislature to get a place established, a place where we can put our best man, and out of which good pathological work can come.

After Dr. Billings closed his remarks, the following discussion ensued :

Dr. Lee thought that one way to form a veterinary centre might be to raise funds to pay the expenses of a farm, to which we might send our surgical cases, or surgical cases which the owners did not care to see through to the end ; the members of the Association to send the cases and render their services free.

Dr. Winchester thought that Dr. Billings had struck the right keynote in speaking of Amherst. He also referred to Dr. Goessmann's work on feeding experiments with animals, and said he had obtained results that would astonish the world when he was ready to publish them. Dr. Paige is a good man, although without the special training required by a scientist. Dr. Humphrey

is a good microscopist, and with such a chemist as Dr. Goessmann, and with the buildings already built, there is a valuable nucleus ready for immediate work.

The President said that Dr. Billings had warmed us up on a new tack, but that we are not very good as politicians to get such work done. An illustration of how useful a veterinary department at the Experiment Station at Amherst would be to the profession, and to owners of animals, Dr. Winchester cited an incident in his own practice. A farmer lost several cattle, and was afraid that he had some contagious disease among them, or that some malicious person was poisoning them. Dr. Winchester sent some of the viscera from animals which had died to Prof. Goessmann, who found that the trouble was due to acetic poisoning as a result of feeding too much ensilage. The food was changed, and the survivors recovered.

Dr. Billings mentioned a disease in horses, fed upon ensilage, resembling cerebo-spinal meningitis, which was undoubtedly due to some germ formed during the fermentation of the food.

Dr. Peters asked Dr. Billings if he thought Clark University would establish a department for the investigation of the infectious animal diseases, in case we failed to secure anything at Amherst. Dr. Billings thought that Clark University is a great thing, and that Dr. Hall is willing to do anything he can to help him, but that he favored Amherst *as the place*.

Dr. Stickney thought that the work at Amherst in feeding animals, and vegetable physiology, was about the only systematic work of any importance done in this country, with the exception, perhaps, of a little work on rabies and tuberculosis, which had been done at the Harvard Medical School.

The conversation then turned to a discussion of Dr. Howard's case of springhalt at Ward's Wharf.

Dr. Winchester made the motion that the Secretary be instructed to write to Clark University, asking if they would like Dr. Howard's springhalt case for purposes of autopsy, and if they would, that they be furnished with the results of both microscopic and macroscopic examination, and that the bones of the hind legs from the tibias down be returned to the Association. Seconded by Dr. Winslow. Carried.

Dr. Winchester spoke of a case in his practice at Lawrence, of a dog bitten by another one last July, which showed no evidences of rabies until the other day. Dog, upon post-mortem by Dr. Winchester, was found to have foreign bodies in stomach, stomach congested, brain congested, and effusion in the ventricles. He had bitten other dogs. Query: Will they go ten months before showing symptoms? Dr. Winchester then spoke of a dog which had not been in contact with other dogs for twelve months. He shows rabiform symptoms, and was poisoned by him. On post-mortem the stomach showed erosions; brain not examined. Diagnosis in this case, gastritis.

Dr. Lee reported a case of hernia in a gray gelding. The animal was a young one which the owner had just bought, and the first night he was brought home kicked over the partition of the stall, the near hind leg hanging over the partition. After freeing him the owner found he had a large swelling above the left flank, but did not attach much importance to it. He did not seek professional advice, but took the opinion of a friend, who told him it would be a

"gathering," and to wait a few days until it "softened," and then to "stick a knife in it." After a few days the owner "stuck a knife in it," and as nearly as Dr. Lee could find out a little blood-stained serum ran out. Later in the day the horse was taken with colicky pains, and Dr. Lee was sent for. He found a loop of intestine protruding from the opening made by the knife, and already becoming gangrenous. After getting Dr. Peters to see the case in consultation, it was decided that the only thing to do was to destroy the animal. Upon post-mortem a rent six inches long was found in the muscular coat of the abdomen, in the upper part of the flank, the peritoneum and intestines being retained by the skin and subcutaneous connective tissue. The animal had been regularly worked for a week or ten days after receiving the injury up to the day the owner had opened the swelling. The loop of protruding intestine was the size of a man's fist, strangulated at the opening in the skin, and had commenced to mortify.

Dr. Lee also reported a case of a horse that had had trouble with his teeth for four years. About three years ago the first upper molar tooth had been pulled out, and the animal's mouth afterwards neglected, the unopposed lower molar grew until it had worn a hole in the palate, exposing the lower ends of the turbinated bones and causing them to ulcerate. There was a disagreeable smelling discharge from the nostril and the horse made a roaring sound when put to any exertion. Dr. Lee removed the overgrown first lower molar, and knocked out two pieces of the root of the upper molar which remained, leaving a hole as large as a half dollar in the floor of the nostril. This hole had to be plugged with oakum when the horse drank, as if left open it prevented his making a vacuum with his mouth, and hence he could not drink. The hole is now closing rapidly with healthy granulations on the ends of the ulcerated turbinated bones, the discharge is ceasing, and has lost its disagreeable odor, and the horse now feeds easily and is rapidly gaining in flesh and strength.

Dr. Winchester reported a case of fracture of the pubic symphysis in a mare which was trying to foal. She was standing upon a wet floor when her hind feet flew out sidewise, and the ischiopubic symphysis split its entire length.

Dr. Winslow said he had a case of ulceration of the palate similar to the one reported by Dr. Lee.

Dr. Blackwood reported a case of rupture of the uterus of a mare used on the horse cars. She was in foal, and last winter fell down and the car on to her. She did not seem much hurt at the time, and was soon able to resume work again. One night this spring he was sent for in a hurry to see the mare, as she was trying to foal, and evidently required assistance. When he arrived, the mare was dead, and a quantity of large intestines protruded from the vagina. Upon post-mortem examination he found a rent at the neck of the uterus through which the intestines escaped, and a fully-developed foal in the uterus. The edges of the rent were fully cicatrized, showing the tear to be an old one, and in all probability the result of the fall last winter.

Dr. Howard said that Mr. Ward must often have interesting experiences, and called upon him for a few remarks.

Mr. Ward related a case that might have been mistaken for rabies by mem-

bers of the laity, which occurred in one of his hounds. The dog acted strangely one morning when he came down stairs, snapped at him and the maid when they went to touch him and acted in a very unusual manner. He told his man he was afraid the dog was going mad, and to chain him securely in the stable until his return that evening. He then set out for his place of business, but had not gone far when he met a neighbor who told him that one of his hounds had been smelling around one of his (the neighbor's) bee hives that morning and had been pretty thoroughly stung. Mr. Ward said that the case of rabies was at once accounted for, and he told the man to unchain the dog as soon as he returned home, and the dog was perfectly well up to the present time. He thought that many cases of so called rabies could often be accounted for in a similar way. Mr. Ward also kindly offered to keep the pony with springhalt at his wharf as long as the Association wished it to remain there.

Dr. Winchester reported a case of fistula of Stenon's duct in a horse.

Dr. Winchester moved that the Association extend a vote of thanks to Mr. Ward for his courtesy and kindness in keeping the horse with springhalt at this wharf for our observation.

Seconded by Dr. Stickney. Carried unanimously.

Meeting then adjourned.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening, June 24th, 1891. President L. H. Howard in the chair.

Members present : Drs. Becket, Blackwood, Emerson, Hadcock, Howard, Marshall, Winslow and the Secretary. Honorary member : Dr. Stickney.

Minutes of the previous meeting read and accepted.

The Secretary reported having seen President Goodell, of the Massachusetts Agricultural College at Amherst, at commencement, with reference to the appointment of a veterinary scientist upon the staff of the State Experiment Station. Dr. Winchester had also talked with President Goodell about it at the same time. Both President Goodell and Professor Goessmann were in favor of such an appointment, and the Board of Control of the Experiment Station, at the annual meeting, held at Amherst, June 9th, had appointed a committee, consisting of President Goodell and Secretary Sessions, of the State Board of Agriculture, to meet a similar committee from the Massachusetts Veterinary Association, to discuss the proper steps to be taken toward the establishment of a veterinary department at the State Experiment Station.

Dr. Stickney spoke in favor of the Association's taking action to bring about such a state of affairs.

Dr. Blackwood suggested that the chair might appoint a committee to meet the committee from the Board of Control of the Experiment Station.

Dr. Marshall then moved that the chair appoint a committee of two to confer with President Goodell and Secretary Sessions. Seconded by Blackwood, and carried.

The President then named Drs. Winchester and Peters to serve on the committee.

The Secretary then reported that he had taken no steps towards notifying all veterinary graduates in the State of the existence of the Association, or towards having copies of the constitution printed, because he was instructed to notify *all* veterinary graduates, and there were some he thought it would be as well not to notify. And with regard to the constitution, he thought it might be well to modify it by doing away with the clause requiring a thesis from applicants for membership as one of the conditions of admission.

After considerable discussion it was decided that the matter of notifying veterinary graduates of the existence and objects of the Association could safely be left to the discretion of the Secretary.

A request in writing was then filed with the Secretary that Article II., section *a*, of the constitution, be amended so that section *a* of said Article be rendered inoperative for a period of two years from April, 1891, i. e., that the thesis as a requirement for admission be not called for during the period named.

Under the provisions of the constitution governing amendments no action can be taken until the next regular meeting, which does not come until September.

The work done at the session of the Legislature, just adjourned, for recognition and advancement of veterinary science, by one of its members, Mr. F. H. Appleton, of Peabody, was then brought up.

Dr. Marshall moved that the Secretary be instructed to extend a formal vote of thanks from the Massachusetts Veterinary Association to Francis H. Appleton, Esq., for the kind and friendly interest he had shown in the welfare of a hitherto rather neglected profession. Seconded by Dr. Hadcock. Carried unanimously.

Meeting then adjourned.

AUSTIN PETERS, *Secretary*.

CONNECTICUT VETERINARY ASSOCIATION.

The annual meeting of this Association was held at the Scoville House, Waterbury, on Tuesday, June 2d, at 8 o'clock in the evening.

The members present were E. R. Storrs, Chas. H. Smith, H. Whitney, N. Tibbals, Robert Todd and Thomas Bland. Geo. B. Towne, D.V.S. and Mr. J. Schofield, veterinary student, were also present.

The President, Dr. Bridges, not being present, Dr. Chas. H. Smith, Second Vice-President took the chair.

Dr. E. R. Storrs proposed Dr. Geo. B. Towne for membership.

The following officers were elected for the ensuing year. Thomas Bland, President ; Chas. Smith, First Vice-President ; Harrison Whitney, Second Vice-President ; Robert Todd, Secretary ; Nathan Tibbals, Treasurer.

Board of Censors: E. C. Ross, Geo. Bridges, E. R. Storrs, Harrison Whitney and Nathan Tibbals.

The retiring President, Dr. Geo. Bridges, not being present on account of poor health, his address of greeting was read by the Secretary as follows :

GENTLEMEN : It gives me great pleasure to greet you at this, the close of another year. I congratulate you on the success of our Association ; little by

little, step by step we have increased our membership, become influential outside of the profession as well as in it, commanding the respect of the public and official bodies of the State until the Connecticut Veterinary Medical Association has grown from its infancy, and passed through the struggles of its first years, through the combined efforts of a determined few who saw its needs and usefulness in future years and who—let me add—have stood fast to her helm ever since, and now we have a regularly chartered and incorporated Association, composed of a body of men who are determined to still further advance the profession in our State, and at the same time are ever ready to protect stock owners from losses through contagious and infectious diseases, and only ask the confidence of the public that they may also be the means of protecting the human family from the transmission of such diseases from animal to man.

There have been many very interesting papers read and much benefit derived from their discussion. Interesting and instructive cases have been freely quoted by all. Much has been accomplished and last, but by no means least, the tie of fraternal fellowship has been still further strengthened, and it is the earnest wish of your humble servant that nothing will ever disturb it.

We may have our little differences outside, but no matter, let us go on in the future as we have during the past.

Our financial standing is good and we are every way in a flourishing condition. We have a committee on contagious and infectious diseases who have accomplished good work during the past winter.

No doubt you have all read their report as published by the State Board of Health. It is a correct version of the condition existing in our State on such diseases, and a step in the right direction.

The committee are to be congratulated on this good work, and I know have the thanks of every member of this profession at home and abroad, not speaking of the thanks due them from the many loving mothers and fathers who are many times using milk from diseased cows. If you have not done so I would suggest that the report be struck off in pamphlet form and well distributed throughout the State.

I hope this committee will be continued, and if the political muddle ever clears up let them draft a good strong bill.

If on tuberculosis, I am in favor of inspection of all herds of dairy cattle, compelling the farmers to report all cases in their herds accompanied by a certificate of the attending veterinarian. Any neglect on his part to carry out the law to be amenable to punishment.

I would have a fine imposed on any veterinarian who refused to grant such a certificate or fail to report any contagious disease, of whatever nature, brought to his notice. The question of indemnity to owners of diseased stock has often been discussed in different States, and it seems to be the opinion of many that a glandered horse is not worth anything anyway. I do not think that should be so. Why should a glandered horse be a dead loss in a State where this loathsome disease has been allowed to run rife for many years? In my opinion if this State would pay something, no matter how small, that in one year, or two at the outside, with proper laws and proper enforcement the disease would be entirely stamped out.

Before concluding I would like to call your attention to one thing we have neglected in the past year. We have not performed our duty towards our American veterinary journals. These journals must have support to live and material for publication. I would suggest that we give regularly, papers that are read and those of the cases quoted. I do not think it a good plan to crowd their pages with every detail of these meetings, but as much as in the Secretary's judgment would be interesting to the profession. I know that I find much food for thought in the reports of other Associations, and I think it no more than right that we too should contribute our share.

In conclusion I wish to thank you for the great honor you conferred upon me in the past two years. As I look back on the time now passed away I cannot but think of it with pleasure. At each meeting every member carried himself with decorum becoming a gentlemen.

I take this opportunity to thank our faithful Secretary for his courtesy towards me on all questions and at all times, and if I have in any way offended him by alluding to the above, I wish to assure him that if I were his judge I would certainly acquit him.

The next meeting will be held in New Haven, on Tuesday, September 1st, at which time Messrs. Bland and Todd will read papers.

R. S. TODD, *Secretary.*

COLLEGE COMMENCEMENT.

The annual commencement exercises of the Veterinary Department of the University of Pennsylvania were held on the 11th of June. The following gentlemen received their degree of V.M.D., Doctor of Veterinary Medicine :

Bartholomew, Cleaver J.....	Philadelphia, Pa.
Bear, Benjamin S. J.....	Mt. Joy, Pa.
Bickel, Samuel D.....	Philadelphia, Pa.
Bunting, Elwood B.....	Burlington, N. J.
Conard, Milton E.....	West Grove, Pa.
Conrow, Abraham E.....	Moorestown, N. J.
Edwards, Warren.....	Philadelphia, Pa.
Entriken, Harry D.....	Kennett Square, Pa.
Jolly, Charles R.....	Atlanta, Ga.
Records, John H.....	Lewes, Del.
Senseman, Frank B.....	Mechanicsburg, Pa.
Tag, William.....	Philadelphia, Pa.
Wheeler, Arthur S.....	New Orleans, La.

OBITUARY.

ROBERT LAIDLAW, M.R.C.V.S.

We regret to announce the death of Dr. Robert Laidlaw, which occurred some two months ago, in Albany, where he

has been in practice for a number of years. Born in Scotland, in 1822, Dr. R. Laidlaw came to the United States in 1860, traveling for some time through the country, and finally settling in Albany, N. Y. His diploma bore the date 1840.

CORRESPONDENCE.

A REPLY.

Every year about this time the readers of the AMERICAN VETERINARY REVIEW are treated to an article or two on "Graduates and Non-graduates," or "Regulars and Irregulars." It is an old "chestnut," and I wonder that the editor of the REVIEW will publish such correspondence. Mention is made occasionally that good articles are left out for want of space or time. Would it not be well to insert them in place of this quack correspondence?

No doubt there are worthy men in the country that are practicing veterinary surgeons and are not graduates. Many of them have not had an opportunity to attend a course of lectures for want of time or money. Those men have the sympathy of all honest people. But when an empiric comes out and claims to know more and to do more than educated men, I can only quote the old adage in reply to his correspondence. "Where ignorance is bliss 'tis folly to be wise."

WM. PETRIE, V.S.

CRITICISM.

Editor Review:

DEAR SIR:—Having read V. G. Hunt's article in the REVIEW on regulars and irregulars, I wish to make a few remarks, for such a letter as that would, or ought to, exasperate any regular practitioner to think a man like him would have the audacity to remonstrate the graduates by raging.

Enclosed I hand you three dollars for the renewal of my subscription to the REVIEW which I find indispensable. Although so many are clamoring for a law to throttle all irreg-

ular practitioners and to stop this species of writing, would it not be a good idea to lay a heavy tax upon the irregulars and turn the proceeds into a pension fund for these regulars who can get no business, and who are crying aloud for protection. I for one would gladly pay my share of the tax. He also said the practice of medicine may be a science, but rather incomplete, and then tried to illustrate it by President Garfield's case, and the moonshiner of North Carolina, which at the same time was shot so full of holes that his hide would hardly hold ear corn, and was caused by an obscure mountaineer surgeon.

What a beautiful expression! it is just such illiterate individuals as him that makes so many people have such little confidence in the veterinary profession, and it is to be hoped the time is coming soon when such men will be known no more, and if Mr. Hunt would like to know my address so he can answer this, he will find it is,

HIAWATHA, KANS.

H. T. CARPENTER, V.S.

[This subject is now closed, and no further communication will be received, as we fear but little good to the profession at large could be derived from it.—EDITOR.]

PRACTICES FOR SALE.

Dr. J. H. Collins, of Akron, Ohio, writes: "I would like to correspond with some young veterinary surgeon wanting a good place to locate. This is a town of over 30,000, with good country surroundings. I am going out of practice, on account of age, and would like a graduate of the American Veterinary College. He must be respectable and temperate. I will assist him all I can to start. Address as above.

A first class veterinary practice for sale in Washington, Pa. For further information, terms, and reason for selling, etc., address F. A. Wiltrant, V.S., Washington, Washington County, Pa.

AMERICAN VETERINARY REVIEW,

SEPTEMBER, 1891.

EDITORIAL.

CENTENARIO DELLA R. SCUOLA SUPERIORE DI MEDICINA VETERINARIA DI MILANO,—1791-1891.—This is the heading of a very cordial letter which we have received from the worthy Director, Prof. N. Lanzillotti Buonsanti, inviting us, as editor of the AMERICAN VETERINARY REVIEW, to be present at the ceremonies connected with the celebration of the centenary of the great Italian school.

It was with great regret that we were compelled to inform our illustrious friend of the impossibility of our taking advantage of the courteous missive with which he had complimented us. It is an honor which we fully appreciate, and we would be but too glad if circumstances were so propitious as to allow us to partake of the warm and friendly hospitality which has been so cordially tendered. Under the circumstances, however, all that we are able to do in transmitting our sincere thanks, is to assure our Italian friends of our best wishes, our warmest sympathy, and the hope which we entertain of being present on some future day at an international gathering, which may afford us the opportunity we missed to-day, of giving them a good, warm Yankee hand-shake.

The ceremonies of the festival will be continued during four days, beginning on Saturday, September 5th, and the programme, which has been prepared by the Committee of Arrangements, promises a succession of events in which social enjoyment and the serious business of the occasion will agreeably and profitably alternate and mingle.

If it were a lawful thing to do, we should envy the

National Veterinary Congress of the professors and practitioners of beautiful sunny Italy the prospect before them of such a season of combined profit and enjoyment as that which awaits them.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.—On the 12th of August, pursuant to a notice received from Dr. Hinckley, we reported ourselves at reception-room No. 217, of the Grand Union Hotel, in this city, as a delegate to a meeting of the New York State Veterinary Medical Association, which, we had been informed, was to be held there and then.

For ourselves, and on behalf of the contingent of the profession hailing from Eastern New York, we anticipated that the occasion would be a great one. The consolidation of the veterinarians of the Excelsior State was in our mind, and we tried to imagine what a strong scientific body that would be, how easy it would be to make it a glory and a benefaction to all in the State, and what noble institutions would be modeled after it, and what grand work would be undertaken and finished when all the States would be equally well equipped, and as ardent in the cause, etc., etc., etc.—and so we reveried on.

Well, yes! the occasion *was* a good one. A sufficient number of notices had been mailed, letters of invitation had been addressed to every one reported to the Secretary or known by him—indeed, we were told that more than three hundred invitations, if we are not mistaken, had been issued. The programme was certainly interesting. Papers had been *promised*, and discussion had been *invited*, and so on. Behold our surprise and our regret to find scarcely a score of gentlemen present! not twenty from our big town of New York and its vicinity! no—but twenty from the western part of the State. The great Head Centers of the East were “conspicuous by the absence” of all their veterinarians, with the exception of *four*.

Such facts do not bear comment very well; indeed, comments are useless, if not worse. A grand occasion has been missed, and who will say when another will occur?

The gentlemen of the western part of the State will certainly remember the lack of sympathy accorded to them. A feeling of professional friendship and interest on their part had been rewarded by a want of even delicate courtesy from those who ought to have shown it. The meeting of the New York Veterinary Medical Society was not, however, a failure. Some important matters were discussed; great interest was shown by those who were present; and the manner in which all the transactions were disposed of showed a will in the members to carry on such work as they had in hand, which tells well for the future of the Association.

The next meeting, we believe, is appointed to take place in January, at Syracuse. Eastern New York veterinarians will do well to try then to repair their error of said month. But who knows? If it was too hot to come to New York in August, perhaps it will be too cold to go to Syracuse in January.

We received the transactions of the meeting too late for this number; they will appear in our next issue.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.
—As will be seen by the programme printed below, the twenty-eighth annual meeting of the United States Veterinary Medical Association will be held on the 15th of this month in Washington. Though this is called the twenty-eighth meeting, it would seem that after all it is but the *second* meeting, for, correctly speaking, it is only since the meeting in Chicago last year that the Association has assumed its true *national* character.

Last year great efforts were made by Western veterinarians to make the meeting a success. There cannot be a doubt that this year Eastern members of the profession will exert themselves to reciprocate with interest the attentions they received in Chicago. This meeting will assume, besides, more the appearance of being of a national character by reason of its taking place in the capital of the United States; and this seems to us one of the wisest moves the Association has made for a long while.

According to the notice of the Secretary, papers of inter-

est are announced, and the names of those that are to deliver addresses more than suffice to give assurance as to the interest of the meeting. And besides—we may say it between us—we understand that other papers than those already officially on the programme may be presented by gentlemen who for the present desire to remain unknown. There are talks on ophthalmology, on ethics as a means to elevate the profession, etc.; and to all these are to be added the discussions which were postponed from the last meeting.

How long is that meeting to last, Mr. Secretary? You have failed to tell us. Your programme is a little incomplete on that score. But no matter, the meeting promises to be a great affair, and the dreams indulged in years ago concerning the great prospects of the Association appear to be approaching realization. The United States Veterinary Medical Association has a great future before it. The consolidation of its forces was begun in Chicago, and is going to be firmly completed in Washington. To what importance it may attain in connection with the future welfare and advancement of the profession no one can tell, but it must in a few years occupy a position much superior to that of any similar body of the Old World.

The twenty-eighth annual meeting of the United States Veterinary Medical Association now promises to be the largest gathering of veterinarians ever held in the United States. The most aggressive work has been done by the Eastern, Central and Western States Secretaries, and from all sections come evidences of such widespread interest as will make this meeting a memorable occasion in the history of the Association.

One of the richest programmes ever offered will afford interest and enjoyment to every member of the profession. To the papers already announced on "Sterility or Barren Mares," by Dr. C. C. Lyford, and a paper by Dr. Bryden, of Boston, there will be added one on "Rachitis," by Dr. W. L. Williams, of Bloomington, Illinois, and his work in the scientific field of labor for our profession is a rich guarantee for a good paper of interest to all. Another paper entitled "Identification of Animals," by Prof. R. S. Huidekoper, a subject of great interest in view of the remarkable advance of values wrapped up in the equine species of to-day, and its bearing in relation to heredity and breeding, will afford a rich entertainment for those present.

The discussion postponed at Chicago on the paper of Prof. A. Liautard, relative to veterinary jurisprudence, as it applies to "Warranty and Soundness," and the need to-day in America of better and more uniform laws relative to the responsibility of the veterinarian, the seller and the purchaser, is of such growing

importance to us all that it needs no further comment. The Committee of Arrangements are making an effort to have this subject discussed by the most eminent members of the Association.

The reports of the Committee on Intelligence and Education, the Committee on Diseases, and special committee on Food Inspection, as also the reports from Resident State Secretaries, will be of the most complete character and promises the most thorough consideration by any body of veterinarians convened in America.

All members of the Association and members of the profession east of Chicago will bear in mind that all railroads in the above territory will grant $1\frac{1}{3}$ rate to all those attending. Every member will ask for a certificate at the point of departure and will hand this to the Secretary at the meeting, which, when countersigned, will entitle him to a one-third rate returning. Tickets will be on sale at all points at least three days before the day of opening, and will be good for return passage until the 20th.

The Comitia Minora will meet at 8:30 A.M. at Willard's Hall, on the morning of September 15th. The regular session will convene promptly at 10 A.M., and it is urged upon all members that they endeavor to be present at the opening.

All members in attendance will register their names immediately upon entering the hall, and all information desired will be gladly afforded by the local committee of arrangements.

W. HORACE HOSKINS, *Secretary*,
12 South Thirty-seventh St., Philadelphia, Pa.

AMERICAN VETERINARY RECORD.—Some time ago we received a prospectus of the above named publication, which announced it as a semi-monthly journal, to be "devoted to the wants and interests of the busy veterinarian, who desires to know the essence of all good things from all good sources." We have not as yet seen a copy of this promising contemporary, and would be pleased to look it in the face, for our own benefit as well as for that of our readers.

NOTICE.—Some friend has sent us a box containing certain bottled pathological specimens of which we would like to be further informed. One of the bottles contain some parasites (worms); another a cerebellum and part of the rachidian bulb; another a piece of liver, and the fourth what seems to be a piece of heart. As the box was not accompanied with a letter, and was destitute of any mark or label, we are unable properly to acknowledge the favor of its transmission, or offer any opinion respecting the specimens. The sender will accept our thanks, and do us a favor by forwarding some written statements as to their origin and nature.

ORIGINAL ARTICLES.

THE CHANGES FOOD UNDERGOES IN ITS PASSAGE THROUGH THE DIGESTIVE TRACT.

By A. H. LOGAN, V.S., Bellefontaine, Ohio.

(A Paper read before the Ohio and Michigan Veterinary Societies.)

The notice received by me to prepare a paper for discussion on this important occasion, was at such a late hour that I wrote our Secretary declining the honor. But on reconsideration I withdrew my former objection and prepared a paper on "The changes the food undergoes in its passage through the digestive tract."

It is not my intention to give a description of the organs comprising the digestive tract, and accessories thereto, as I presume you are all as thoroughly conversant with the anatomy of the parts as I am, but simply to state the various secretions desired to promote digestion, from whence obtained and their various actions upon the food.

The food on entering the mouth undergoes two processes, viz.: Mastication and insalivation. The former is performed by the teeth, and the latter by a secretion called saliva, which is obtained from the salivary glands.

The presence of food in the mouth excites the terminal fibres of the gustatory and glosso-pharyngeal nerves, which transmits the sensation to the medulla, the reflex action is returned along the chorda tympani and auriculo temporal nerves which, by inhibiting the sympathetic, dilates the blood vessels, and increases the functional activity of the salivary glands. Some say the chorda tympani contain fibres which directly stimulate the secreting epithelial cells. Stimulation of the vaso-motor nerves diminishes the supply of blood, by narrowing the caliber of the vessels, thereby lessening the secretion. The theory that saliva is produced by pressure alone is incorrect, as the pressure of saliva in the ducts is about twice as great as the blood in the blood vessels. Such being the case, and if due to pressure alone, the saliva would re-enter the blood vessels and lymphatics.

The flow of blood is secondary to the secretion called forth by stimulation, as after ligating the vessels, an amount of saliva can be made to flow from the gland, which could not have been stored up in the cells prior to ligating.

The activity of secretion and vascular dilatation is due to different nerves, as shown by atropia stopping the secretion of saliva, but not preventing the dilatation of the vessels, proving that its effect is restricted to a mechanism engaged exclusively in controlling the activity of the gland cells.

The cells are constantly undergoing repairs and are never perfectly quiescent, but are diligently adding to their stock in hand, as a result of the intrinsic power of their protoplasmic contents.

Saliva is a viscid, frothy, alkaline fluid. Specific gravity about ten hundred and five, and contains: (1) mucin, (2) ptyalin, (3) albumen, (4) salts and water, also epithelial cells, mucus and salivary corpuscles.

The mucus is obtained principally from the sub-maxillary, sub-lingual and small mucus glands.

Among the salts is found potassium sulphocyanite, a constituent not found in the blood.

The saliva moistens the particles of dry food and makes them adhere together, also facilitates deglutition by coating the bolus with a viscid fluid, and converts starch into grape sugar, which is due to a ferment called ptyalin.

Ptyalin effects alterations on the substances on which it acts, without undergoing any perceptible change or diminution itself. It exists in such small quantities that its presence can only be known by the effects it produces, and is most active at bodily temperature. Ptyalin acts on starch and is hence called amylolytic ferment. Its mode of converting starch into grape sugar is by uniting to the starch chemically one molecule of water.

During this process, which takes a few minutes to complete, various stages can be detected. First, two substances are formed, which together are called dextrin. One easily passes into soluble sugar and give a red color with iodine, and is called erythro-dextrin. The other gives no color with iodine,

and is with difficulty converted with grape sugar, and is called achroo-dextrin. The sugar thus formed is called ptyalose, which by the action of sulphuric acid is converted into grape sugar (glucose).

Facts about ptyalin. (1.) The extremely small amount required to make the fluid effective. (2.) There is no appreciable diminution in the amount of the ferment, so it cannot be said to be used up in the process. (3.) It acts most readily in alkaline solutions; slowly in neutral, and not at all in acid the strength of two per cent. hydrochloric acid. (4.) Most active at bodily temperature. Excessive heat destroys it. Cold checks it. (5.) Strong acids or alkalies destroy its amylolytic power. (6.) It has but little effect on raw starch, its cellulose coating protecting it, but acts rapidly on well boiled starch. (7.) It is most active in weak starch solutions, and is much impeded in its action by an accumulation of sugar.

To recapitulate we find the following changes take place in the mouth. (1.) Solid food is or should be finely subdivided. (2.) Dry food is moistened. (3.) Rolled into a bolus. (4.) Subricated. (5.) The soluble part is dissolved. (6.) Part of the indiffusible starch is converted into soluble, diffusible sugar.

The food is conveyed to the stomach by the act of deglutition, where it again undergoes changes by the action of the gastric juice.

The gastric juice is a clear, colorless, strongly acid fluid, specific gravity 1,002. It is secreted by small glands situated in and below the mucous membrane of the stomach. There are two different kinds of cells lining the gastric glands and ducts, viz.: the spheroidal, which are most numerous, line the centre of the gland; the others are oval in shape and are found on the parietal portions of the glands and in the ducts.

The chief secretory activity of the glands resides in the central or spheroidal cells, and produces pepsin. Pepsin is also produced by the mucous glands at the pyloric end of the stomach.

The formation of hydrochloric acid is not well understood,

but is most probably secreted by the ovoid or parietal cells, as the spheroidal cells in the centre of the glands do not give an acid reaction, while the ovoid ones in the neck or orifices of the glands are distinctly so. This view is supported by the alkilinity of the gland cells at the pyloric end of the stomach, where the ovoid cells are not found.

The gastric juice acts upon the albuminous bodies, which being colloid cannot diffuse through animal membranes until so acted upon, when they are converted into peptones. It has no action on starch, sugar or fats. It simply dissolves the connective tissue binding the fat vesicles together and sets the fats free, which become liquefied by the animal temperature.

Proteid substances acted upon swell up, become semi-transparent, and then dissolve. There are several different bodies included under the peptones, as metapeptone, parapeptone, dyspeptone, etc., which closely resemble one another in properties but differ from albumen (1) by readily diffusing through animal membranes; (2) not coagulated by heat or nitric acid; (3) not precipitated by acetic acid and ferrocyanide of potassium; (4) giving a pink color on the addition of caustic potash.

They resemble albumen in being precipitated (1) by tannic acid; (2) by lead acetate.

The gastric juice contains (1) pepsin; (2) a curdling ferment; (3) hydrochloric acid (free); (4) mucin; (5) salts and water.

Pepsin plays the part of a ferment, but not acting on the proteids until the hydrochloric acid has reduced them to acid albumen, metapeptone, parapeptone, etc. They are then changed into a soluble, diffusible and uncoagulable product—peptone.

Pepsin itself cannot convert albumen into peptone. Albumen may without the presence of pepsin give rise to peptone if treated with strong acids, alkalies, boiling under high pressure, putrefaction and other fermentative actions. Pepsin occurs in small quantities and is not destroyed in the act of digestion.

The curdling ferment is a separate and distinct ferment, having the property of curdling milk.

The mucin is obtained from the mucous glands. The salts are chiefly the chlorides of potassium, sodium and calcium.

RECAPITULATION.—It must be remembered that while the food is yet in the mouth, the secretion of the gastric juice commences, and is increased as the food reaches the stomach. The acid gastric juice neutralizes the alkaline saliva. As digestion progresses the mass becomes a dull gray turbid fluid composed of starch granules, oil globules, dissolved parapeptones and particles of partially digested proteids, and is called chyme. The chyme contains but few peptones, which proves their absorption from the stomach, with the soluble sugar and ordinary fluids taken with the food.

While the above changes are taking place, the liver and pancreas are rapidly secreting fluids the result of reflex stimulation, to complete digestion when the chyme enters the intestines.

The pancreatic fluid is a thick, transparent, colorless, strongly alkaline fluid, and contains (1) four ferments, viz.: (*a*) trypsin, which changes proteids into peptones; (*b*) pancreatic diastase, changes starch into dextrin and sugar; (*c*) curdling ferment, curdles the casein of milk; (*d*) emulsive ferment, emulsifies and saporifies fats; (2) albumen; (3) mucin; (4) salts and water.

The pancreatic juice is produced by the highly increased activity of the protoplasmic contents of the gland cells, the result of reflex stimulation.

The most important function of the pancreas is the formation of a special ferment—trypsin, which converts proteids into peptones, but differs from gastric digestion in (1) requiring an alkaline instead of an acid medium; (2) the proteids are dissolved without any preliminary swelling; (3) leucin and tyrosin are formed.

The fluid secreted by the protoplasmic granules of the gland cells is inert towards proteids and is called zymogen. On its escaping from the cells it is supposed to come in contact with an acid which converts it into trypsin.

The albumen is changed into alkali-albumen by the action of sodium carbonate. The change to alkali-albumen and peptone as accomplished by trypsin is by gradually eroding the proteid from the surface, thus diminishing it in size. While the above changes are taking place, there are formed two nitrogenous bodies: leucin, belonging to the fatty acids, and tyrosin, to the aromatic acid group.

As pancreatic digestion proceeds, various unknown decomposition products appear, chief of which are indol and skatol, which cause the peculiar disagreeable odor of pancreatic digestion. Small quantities of phenol are also produced.

Saponification is the splitting up of a portion of the fats into glycerine and leucin by the action of a special ferment—steapsin.

Emulsification is the reduction of fat to a very fine state of subdivision, and facilitated by (1) the albumen in solution; (2) the alkalinity of the fluid; (3) the presence of soap; and (4) the motion of the intestines.

The amylolytic power of the pancreatic fluid is more rapid and energetic in its effect on starch than that of the saliva. It is said to affect raw as well as boiled starch, which is due to a special ferment—amylopsin.

RECAPITULATION. The pancreatic fluid, (1) assists in neutralizing the acid gastric juice; (2) emulsifies and saponifies fats; (3) converts proteids into peptones; (4) converts starch into grape sugar.

While the above changes are taking place, the ingesta is further acted upon by the secretion from the liver—bile. In the protoplasm of the liver cells are several varieties of granules, the commonest being bright, refracting fat globules, which vary in amount with the different stages of digestion. Others, of a yellow color, secrete the coloring matter of the bile. Others, less refracting and colorless, are supposed to produce glycogen.

Bile is an alkaline, golden-yellow fluid, of bitter taste, specific gravity 1.018, and is composed of mucin, bile pigments, sodium salts of bile acids, cholesterin, lecithin, salts and water.

The mucin is obtained from the mucus glands in the ducts. It passes unchanged into the intestines, and is evacuated with the fæces.

The bile pigments are sometimes of a reddish form—bilirubin, and are probably obtained from the hæmoglobin of the red corpuscles in the liver, as it is identical with the hæmatoiden of old blood clots. On oxidation they become green—biliderdin. On entering the intestines, the biliderdin is decomposed by taking up water, forming hydro-biliderdin, and is thus eliminated as the coloring matter of the fæces—stercobilin.

The bile acids are two compound acids, glycocholic, and taurocholic, which exist in combination with sodium. They are formed in the liver, as no trace of them can be found in the blood. The bile salts in digestion are split up, decomposing the glycocholic and taurocholic acids. The cholic acid remaining free in the intestines is eliminated with the fæces, while the glycin and taurin are reabsorbed into the blood.

The principal fatty matters of the bile are lecithin, palmitin, stearin, olein, and soda soaps.

Cholestrin is held in solution by the bile salts, and leaves the intestines with the fæces.

The salts are sodium and potassium chloride, calcium phosphate, magnesia and iron.

The acid secretion of the stomach on entering the intestines is neutralized by the alkalinity of the bile and pancreatic fluids, which cause a precipitate of acid-albumen and peptones to be thrown down.

The uses of bile are (1) slight action on converting starch into sugar; (2) assists in emulsifying and saponifying fats, but to a much less extent than the pancreatic fluid; (3) assists in the absorption of fats. Owing to the peculiar power possessed by the bile salts, a membrane saturated with it allows an emulsion of fat to pass more readily through than if kept moistened with water; (4) increases peristalsis. (By its stimulating actions it excites the muscles of the intestines to increased action); (5) moistening and lubricating. (The bile adds to the ingesta a supply of fluid and mucus, which moistens and lubricates the

læces, and facilitates their evacuation); (6) antiseptic: (Bile is said by some to prevent putrefaction; if true, it must be to a very slight degree, as bacteria thrives in and around it).

The intestinal secretion is obtained from the glands contained therein, and is a thin, yellowish, alkaline fluid. Specific gravity 1,011. It is capable of converting cane sugar and starch into grape sugar, by the action of a special ferment—*invertin*. It brings about lactic fermentation, dissolves fibrin very slowly; still less so other proteids. It is also said to emulsify fat.

PUTREFACTIVE FERMENTATION OF THE INTESTINES.

The lower organisms contained in the air and saliva and swallowed, produce certain fermentative changes, quite distinct from the action of the special ferments of the digestive fluids. This is proved by the composition of gases found in the intestines. The oxygen of the atmospheric air swallowed is absorbed, leaving nitrogen, while a quantity of carbonic anhydride and hydrogen from the fermentation of sugar are set free. Lactic and butyric acids are produced at the same time. Indol and skatol are formed by putrefactive fermentation of the leucin and tyrosin.

A SUMMARY OF DIGESTIVE CHANGES.

The food when taken into the mouth is, or should be, finely subdivided, mixed with saliva, reduced to a pulp, a certain amount of starch converted into sugar and rendered alkaline. Fats and proteids unaltered. On reaching the stomach the mass is rendered acid, conversion of starch into sugar ceases. Connective tissue of fats dissolved, fats set free and liquefied by the animal temperature. Proteids dissolved and peptones formed. A grumous mixture of peptones, liquid fats, and starch is formed and called *chyme*, which on passing into the intestines and mixed with the bile, pancreatic and intestinal fluids, becomes alkaline. Conversion of starch into sugar recommences. Emulsifying and saponifying of fats begin. The undissolved proteids are converted into peptones. The diffusible peptones and salts are absorbed and enter the portal system; the fats in a fine state of subdivision enter the lacteals, while the residue or inert material is expelled as *fæces*.

CASES OF DIFFICULT PARTURITION.

BY WM. H. GRIBBLE, D.V.S., Washington C. H., Ohio.

(A paper read before the Ohio and Michigan Veterinary Societies).

I have prepared, not an essay or an elaborate paper on any disease, but a few cases of identical nature which have come under our own observation; and ask your opinion as to the cause and effect of these cases, which we will term "Difficult Parturition, In-breeding and Monstrosities."

CASE No. I.—Summoned early one morning to aid a heifer (first calf). Found the animal in labor, great straining, but no part of calf protruding. On examination, found a transverse presentation, vertical position; and with great difficulty at examination finally decided that the head was uppermost, though not entirely satisfied of this fact; and after tedious manipulation found two feet. Here our trouble began, for as before stated, we had decided the head to be in a certain direction, but the feet now found, by the direction of the toes, decided us that they were those of the hind limbs.

The animal was small and manipulation tiresome, but finally attached cords to these supposed hind feet, and with repeller above tried to bring about a posterior presentation. In this we failed, and on again making an examination after some pulling had been done, we found the breast of calf at pelvic opening with head and neck upwards and backwards; and delivery being impossible in this position, still believing the cords to be on the hind feet, we amputated the head and neck, and removed that part. While resting, supposing we still had plenty of work, what was our surprise to see the heifer expel the calf with scarcely any effort, and explain all our trouble at a glance. The foetus was a monstrosity, with the front and hind limbs, from carpal and tarsal joints down, reversed, points of toes of all four pointing posteriorly.

The upper jaw was four inches shorter than the lower one, the nose proper being entirely absent.

CASE II.—Ten months after the previous case we were again called to the same farm and to aid the same cow. Ex-

amination showed anterior presentation, deviation of head and front limbs downward and backward, but as the foetus was not large, delivery was brought about without searching for and straightening the front limbs. Again the foetus was a monstrosity. Upper jaw four inches shorter than lower one, ending square and sudden, with the nasal openings in this square stump. The right front and right hind limbs from knee and hocks were atrophied or had developed only to about the size of a man's thumb, but of a natural length, and were reversed, as all four limbs had been at the previous birth.

The calves from this cow had been sired by the dam's own sire. Had this anything to do with it? (Owner's name, Dr. Fortier, New Martinsburg, Ohio).

CASE III.—Grey draft mare, six years old. First colt. Examination showed posterior thigh and croup presentation, with foetus so wedged in pelvic cavity as to be unable to move it a particle forward or backward; with saw we divided pelvic bones of foetus above and below the acetabulum, severed the muscular tissues of the parts, succeeded in attaching small strong cords to the head of femur, and with strong traction drew out the limbs, by sort of turning the skin, etc., of the parts inside out. Delivery was now easy. The foal proved to be of good size, well-developed with the exception of forward limbs, which were not more than ten inches in length, normal in shape to the knees, but from that down were reversed, toes pointing backward, as of the cow described. This foal was sired by the dam's own sire. Had this fact anything to do with it?

CASE IV.—Brown draft mare, eighteen years old. First foal. Examination showed anterior presentation, with backward deviation of front limbs, and extreme downward deviation of the head and neck. The mare being large and roomy, and from some cause did not strain at all, I could readily reach the head, to which a halter was applied; but the strength of three men could not straighten the neck. We concluded we had a case of ankylosis of cervical vertebra; so using a saw severed that part, reversing and removing it. We now reached the knees, but again no amount of strength

was of any avail, so the saw was again used at the shoulder. Attaching hooks to the shoulder blades, we drew the foal toward us, and so short was the foetus that we could readily reach its tail, but its width far exceeded the transverse diameter of the dam's pelvis. For four hours we worked at the removal of this, and finally succeeded, after sawing the spinal column at three different places.

We found every joint of foetus, from atlas to coccyx, ankylosed, and the vertebral column to be transversely in the shape of the letter S, which caused the apparent great width. The scapulo-humeral and pelvic femoral articulations were also ankylosed, and all four limbs from hock and knees reversed just as the other cases.

This foal was sired by the dam's own sire, 22 years of age. (Owner's name, Jas. Pussinger, Washington C. H., Ohio).

Here are four cases all exactly alike in one particular, and all inbred alike. Not that these four are all the monstrosities we have seen, but they are all in which the feet were reversed. We cannot say that we believe that the breeding was the cause of this effect, but did it not have something to do with it? I find on page 402, Fleming's Veterinary Obstetrics, something like these cases, but nothing is said of the relationship of sire and dam.

I have known a goodly number of premature births from such breeding, and would ask of you a good expression of your views on the subject.

OSTEOPOROSIS AND OSTEOMALACIA.

Translated by RICHARD MIDDLETON, A.B., D.V.S., Philadelphia, Pa.

The condition known as osteoporosis has for many years been looked upon as a peculiar and separate affection of the compact tissue, principally of the long and of the elongated bones of the equine osteology. The pathological features of the disease are very suggestive of osteomalacia, and if they are not in every detail similar to those of this condition, they are also not sufficiently differentiated from them to create it an individual affliction.

In the pathological anatomy, osteoporosis is described as consisting of a widening in the Haversian canals, through an atrophous process which absorbs the innermost portion of the same; by this process the fundamental substance degenerates into a cancellated formation, which is difficult to distinguish from the normal cancellated tissue of the bone. This atrophy is either concentric or eccentric, according as the process of resorption proceeds toward or from the axis of these vascular canals; and it is evident that such is only possible, after the bony substance has become of a soft consistency, through a hyperæmic circulation.

The appearance of a bone in which osteomalacia is present depends upon the length of time throughout which the bone has been the seat of the process. In the earliest stages there is hyperæmia; the vessels together with the bony (Haversian) canals are of larger calibre, but the tissue adjacent to the latter is only in an insignificant degree altered.

In cases further advanced the hyperæmia is more considerable; a transverse section of a bone from such a case shows numerous red points, with hæmorrhages in the medullary substance. The medulla is enlarged, and within it are noted small bony scales; the bone is much easier cut than in health; the lacuni (osteoplast) are enlarged and empty, their canaliculi have either totally or nearly disappeared, and the bone cells proper are in a thready, degenerated state. The whole presents a transformation of the bony matter into osteoides, and at last is seen one vast mass of cavernous substance. In the severest cases the hyperæmia of the bone and marrow are still more intense, the corticular portion becomes more spongy, soft and tender; but the marrow, contrary to the solid substance, increases and appears as a soft watery mass of a grayish-yellow color, which advances into the epiphesis, thereby so diminishing the strength that fracture is inevitable. The specific gravity of the bone has decreased; much of its calcium salt has disappeared,—indeed only one-half the original quantity may remain,—and contemporaneous with this decrease in solids is an increase in the watery constituents.

Besides the lesions in the bones there are also lesions in the articulations, which produce a reddish effusion. The remaining organs of the body remain unaffected, and throughout the course show no change whatever. By continued wasting and weakness there is induced a cachectic state of the patient, which is constituted by hydræmia, transudations into the several cavities, and a disappearance of the normal fat; also a fading of the muscular tissue and an infiltration of the same with a gelatinous fluid.

The symptoms of osteoporosis do not manifest themselves at the beginning of the affection, but rather when the changes interfere with some physiological function; fractures occur under ordinary driving and with the advance of the disease mastication becomes no more possible, the patient becomes anxious and his steps are short, as if by instinct he was fearful of every act of locomotion. Pressure upon the locally diseased spot causes pain.

Symptoms of osteomalacia are likewise postponed; they do not reveal themselves with the beginning of the lesions in the bones, and the painful character, together with the progressive marasmus incident to the disease, may not be noticed for a considerable time. These symptoms consist in a painful, stiff and anxious manner of progression; after continued exercise, sudden lameness; in standing, the body weight is alternately placed upon one and then the other of the feet; pain upon assuming the decumbent position and also when rising. Pain also in the region of the withers, shoulder, and lumbar vertebræ. Under some circumstances the joints are swollen and emit a crackling sound; later comes parting of the ligaments, dislocations and fractures; and these, moreover, from the most trivial causes. In both affections fractures of the ribs and external angle of the ileum are oftenest observed; but, remarkable to state, these are painful only in a slight degree, and are not inclined to heal.

In summing up the two conditions—improperly so-called, it is evident that the ætiology, pathology, semeiology, course and termination are practically the same. Osteoporosis oc-

curs oftenest in equidæ, while osteomalacia is principally met in bovidæ; the former is a disease of middle life irrespective of sex, and the latter is an affection of the pregnant period. Different locations of the same process should never constitute separate diseases; but rather different processes, whether they occur upon the same region or are widely separated one from the other.

THE NEW PHTHISIS REMEDY.

BY THE SAME.

Before the tuberculin of Koch has been sufficiently investigated either clinically, pharmacologically or chemically, there has already appeared another anti-tubercular remedy, which is concentrating professional attention upon itself. It is the universally known cantharides which is now recommended, and with which we are better acquainted than the human physician. Cantharides contains, among other constituents, an aromatic, irritative substance named cantharidin.

This active principle, when brought in local contact with the skin, mucous or serous surfaces, especially in the kidneys, causes a serous transudation. Liebreich has demonstrated that this infiltration also occurs in the lungs, and that in this locality it is independent of the blood pressure and directly relative to the influence of the cantharidin upon the walls of the capillaries. He further states that this transudation occurs to a more considerable degree in altered or diseased organs, than in those acting physiologically. Through increased quantity of serum, there should result an invigorating and more complete nourishing of the part, and therewith, contemporaneously, an increased power to withstand the bacillus.

As proof of this, Liebreich adduces the fatal working of simple blood serum upon the bacillus as found in canidæ and leporidæ.

This new method has been named by the discoverer "the serum therapy."

Objection may be made to the internal administration of

the remedy, on account of the severity of its local action upon the digestive tract. To obviate this he recommends the subcutaneous injection of sodium cantharidate in the region of the spinal column; the dose is one to four drachms for an adult man.

During such a course of cantharides, the urine must be kept under constant surveillance; the moment blood corpuscles or cylinders are detected the agent is to be immediately discontinued.

Success in some cases has been ascribed to this new therapy.

The commercial sodium and potassium cantharidate are not to be used, from the fact that the gradation of the dose is impossible. Preferably, one dissolves 0.2 grains of cantharidin in 0.3 grains of sod. hydrat. and heats the same together with 20 ccm. of aq. distillat over a water-bath until there is a clear solution; while the latter is still warm it is added to sufficient water to raise the total to exactly one liter. One cubic centimeter of this solution represents $0.0002 = 2$ dgm. of sod. canth.

OPEN-JOINTS, AND A NEW REMEDY.

BY G. A. JOHNSON, D.V.M., Odebolt, Iowa.

(A paper read before the Western Iowa Veterinary Medical Association).

I will offer for your consideration this evening the subject of open-joints, and in connection with it a short discussion of the new remedy, aniline.

Open-joint is an affection often met with in this section of the country as a sequel to barb-wire injuries, and is always of a serious nature, but does not, as of old, necessitate the destruction of the animal.

It is needless for me to take up your time with a discussion of its symptomatology and pathology, so I will at once take up the line of treatment.

The first, greatest, and in fact the base of all treatment is cleanliness, surgical cleanliness, which consists in thoroughly disinfecting the joint and wound, and to maintain aseptics,

and secondly, to offer such assistance to nature as the case may demand in the way of healing and anodyne applications.

I am of the opinion that very frequently the practitioner makes a fatal mistake by closing the opening into the joint before he has rendered it thoroughly antiseptic, for how often do we have to contend with a high systemic fever, and general constitutional disturbances, with a hot and very painful swelling of the joint, after it has been closed, which sooner or later breaks, and discharges a fetid pus.

In this stage the animal rapidly becomes emaciated, weak, and usually quickly succumbs from nervous prostration, as a sequel of the pain caused by the suppurating process going on within the joint.

I can conceive of nothing but failure for the practitioner who so ignores the teaching of modern surgery as to endeavor to immediately close the opening of the joint, notwithstanding the teachings of Prof. Williams.

I have had the best results in treating this affection by injecting into the joints, two or three times a day, a solution of corrosive sublimate, one part to 500-1000 parts of water.

This does not materially interfere with the secreting action of the synovial membrane, but causes some inconvenience by coagulating the synovia, which may be obviated by the use of a remedy to which I will allude further on in this paper.

To the external portion of the wound I usually apply the white lotion, and when the pain is excessive I have the parts bathed, for from fifteen minutes to one hour, with hot water, and then apply an anodyne liniment composed as follows: fl. ex. bellad., fl. ex. aconite, aa., oz. 2; aqua pura, oz. 6; Mx. Sig. Apply to the parts two or three times a day, as the case demands.

Constitutional disturbances are treated according to their indications.

I always expect to close the opening of the joint by the cicatrix of the external wound, having kept the structures of the joint in an antiseptic condition by the use of the sublimate solution. Have never derived satisfactory results from the use of bandages, etc.

My attention has recently been called, by several articles in the *Veterinary Journal*, of London, to the use of the various preparations of aniline, as antiseptics and deodorizers.

As yet I have seen no mention of their use in the affection of open-joints, but from their action, as given in these several reports, I am led to view them favorably for use in this affection.

Pyoktanin, the copyrighted name for methol violet, was introduced into the medical profession by Dr. J. Stilling, of Strasburg, in April, 1890, and the June number of 1891 of the *Veterinary Journal* of London contains a report of Dr. Stilling's experiments with the various aniline preparations.

Methyl violet is about three times as powerful as sublimate in its action on anthrax bacillus, and quite as effectual as sublimate in its action on the staphylococcus pyogenes aureus. 2d.—It is perfectly non-poisonous. 3d.—In consequence of this, it is immaterial how strong the solution may be, even up to the use of the pure substance itself. 4th.—It does not coagulate egg albumen. 5th.—It possesses a wonderful power of diffusion, penetrating the eye like atropine.

“The following are the preparations of the dyes:

“1st.—Pure methol violet, to be used as a powder for large wounds and ulcers.

“2d.—Large pencils, for small wounds, burns, etc. For purulent cases the blue pencil is better than the yellow on account of its greater antiseptic property.

“3d.—Small pencils, for applications to the eye in cases of corneal ulcer, etc.

“4th.—Powders, of 1 in 1000 strength in mild cases of conjunctivitis, and of 2 per cent. strength for the more severe cases.

“5th.—Ointments, in strengths varying from 2 per cent. to 1 in ten.

“6th.—Solutions, used in strengths of 1 in 100 to 1 per cent.; the 1 in 1000 solution may be used for ordinary cases of conjunctivitis, keratitis, etc., and in non-purulent cases the yellow dye auramin may be used on account of its cooling properties. The solutions should be filtered and kept in dark

glass bottles, and changed every eight days. The substance should be absolutely pure."

The May number of the same journal contains the following:

"Aniline dye or pyoktanin, as it has been named in Germany, is now coming into use in that country as an antiseptic and astringent remedy in veterinary practice."

Professor Eggling has employed it in the treatment of foot and mouth disease with surprising success, the affected parts being dressed with a solution of the dye, 1 to 100 of water.

Mehrdorf, of Breslau, reports most favorably of its use in the treatment of this malady. It was applied to 1293 animals, of which 1261 were oxen, 28 pigs and 4 goats, in all the different stages of the disease. The affected parts were brushed with a solution of 1 to 100, and then, to 500, and lastly with 1 to 1000.

In cases where applied at once the animals recovered within twenty-four to forty-eight hours.

It may be mentioned that Eggling applied the solution by means of a syringe.

In a recent number of the *Monatschrift für prakt. Thierheilkunde*, Prof. Schlampp, of the Munich Veterinary School, alludes to the antiseptic and germicide properties of pyoktanin, and gives illustrations of its wonderful value as demonstrated in the surgical clinics of Prof. Hahn. The first and most important feature in it, perhaps, is that it is not poisonous, and does not coagulate albumen. For recent wounds (as immediately after operations) as well as for those which are old, suppurating and of an unhealthy kind, it has been employed, and with better results than any other agent; as it brings on a favorable healing process and alters the character of bad discharges.

"In ulcerations of the skin (as those which occur in distemper of the dog) a watery solution of 1 to 5000, applied by means of a small brush, has been used with the results that any foul smell present has been destroyed, and the sores quickly present a smooth, healing surface. In suppurations of the

skin the effect of its application has been extraordinary, especially in those deep wounds caused by such injuries as dog bites, when the subcutaneous connective tissue is infiltrated with pus.

“ ‘Grease’ of the legs of horses has been treated in all its forms and stages, and it has been found superior to any other remedy, as it not only stops the discharge, but it allays the pain and swelling. In decubitus gangrene (brought about by lying on the side too long) it has likewise been most beneficially employed, being applied by the brush four or five times a day.

“ In middle ear catarrh of dogs it has rendered good service at all stages when applied thoroughly once to three times a day, by means of a brush (large or small, according to the size of the ear). In some cases a tincture acts more powerfully and promptly, and may be dropped into the ear. Schlamp gives its strength as 1 of aniline to 100-500 of absolute alcohol; a half to a whole teaspoonful being sufficient for an ear. The tincture should be slightly warmed before being applied to the ear.

“ It is suggested that aniline might be of great service in catarrh in the respiratory mucous membrane; being given by inhalation. It has been tried in this way in bronchial catarrh, and appeared to diminish the pain.

“ Altogether, the reports from Germany are so much in favor of the employment of this material as an antiseptic and desiccant, that we think it well deserving of a trial in this country. Its innocuousness is a strong recommendation. The number for July, 1891, of the same journal, contains the following reports, by F. Holiday :

“ Case No. 1 was a cob which was suffering from purpura hæmorrhagica. On the seventh day some of the swellings burst, whilst others were scarified; very unhealthy, suppurating wounds were produced, the smell from them being very offensive. These were first dressed with solutions of carbolic acid, after being carefully washed with warm water containing Jeyes’ fluid; but this was not sufficient to produce the desired effect. An aqueous solution of anil. meth. violet was next tried, and with the utmost satisfaction, the offensive smell

being completely destroyed, and the wounds, after dressing for four days, presented a healthy granulating surface, finally healing altogether. In conclusion I may mention that the cob made a good recovery and is now at work again.

"Case No. 2 was a horse suffering from sore withers, caused by the rug being fastened too tightly round its neck. The wounds were very painful, and the animal was unable to wear a collar. After dressing for three days, the soreness had completely vanished, and the horse went to work as usual.

"Case No. 3 was a Belgian horse suffering from chronic 'Grease.' An aqueous solution of anyl. meth. violet was used in order to deodorize the parts, and it succeeded admirably.

"Case No. 4 was also one of 'Grease,' the skin of the near hind leg having been completely removed by some kind of irritant dressing which the owner himself had been applying. In this case also the smell from it was very offensive. After two dressings of anyl. meth. violet, the smell was completely removed. After being dressed for four days, healthy granulations appeared, and the wound ultimately healed up. The leg was also very much swollen, but this was considerably reduced without the application of any other remedy.

"We have also used it in all kinds of wound cases. It answers very well indeed as a coloring agent for lotions, etc., except, perhaps, where the horse is light colored, as in that case, unless it is a very dilute solution, it temporarily dyes it. To be used for the above, of course, it must be first made into a solution. For coloring powders, etc., a very small quantity will produce a beautiful purple tint."

I have given these articles verbatim, the better to give their physiological and therapeutical actions.

In the *Bacteriological World*, for February, 1891, Dr. Tiffany, of Kansas City, gives an extensive account of the use of pyoktanin in ophthalmia, and reports the most gratifying results. As yet I have not had an opportunity to try the drug; but if the drug is reliable in its therapy as delineated in the above reports, it is the coming therapeutic agent in the treatment of open-joints. At least it seems worthy of a thorough trial.

SOME OBSERVATIONS ON CONTAMINATED WATER SUPPLY FOR LIVE STOCK.*

By DR. M. STALKER, V.S., Ames, Iowa.

There is no fact better known to the sanitarian than that one of the chief sources of danger to life and health is the contamination of drinking water. If a malignant form of fever makes its appearance in a family, which cannot be explained by the history of actual exposure to contagium, the water supply always comes in for an early and liberal share of attention. The instances are sufficiently numerous in which the investigator is enabled to trace the malady to this source, to warrant every reasonable precaution in procuring a pure water supply. Nor are these facts known to the sanitarian alone. The reading public have been sufficiently enlightened on this subject to enable them to avoid much of the danger from this source. While we are beginning to take a fairly lively interest in our personal dangers and the methods calculated to avert them, we have yet hardly taken time to consider the economic question of how far our live stock industry may be affected by the same class of causes. We drill down into the solid rock to procure a water supply of unquestioned purity for family use. We boil, or subject to other purifying means, all suspected samples before they can be used. This is well. But all this time our helpless dumb creatures may be compelled to drink from a shallow slough, foul with decomposing vegetation, or from a surface pond almost at boiling temperature under a summer sun, where the minute forms of animal and vegetable life gender in such profusion as to render the whole a mass of animate slime. No one who has had a glimpse of the microscopic world would except a human being to take a draught of such a beverage and live. But our animals are not only expected to live, but to thrive under such conditions. That these expectations are frequently disappointing, I will cite an instance

* Extract from Bulletin Iowa Agricultural Experiment Station, Ames, Iowa.

or two in proof. During the latter part of the summer of 1890 I had occasion to investigate a severe outbreak of disease on a farm in one of the counties of Iowa. The animals, including horses, cattle and pigs, were all affected in the same way. The local symptoms were largely confined to the throat. There was a swelling, partial paralysis of the walls of the upper air passages, and painful and difficult breathing. The animals attacked uniformly died after an illness of about two days. The disease I could not recognize as belonging to any of the well defined types with which I was acquainted. Here were horses, cattle and pigs sick and dying with disease showing the same symptoms in all. There are few if any of the specific forms of disease that spread as epizootic among the widely differing species of domestic animals. I could not classify the disease, and at once set about the task of discovering, if possible, some common source of exposure. The pastures, buildings and water supply were each in turn subjected to careful scrutiny. The buildings were such as are to be found on ordinary Iowa farms, fairly comfortable and clean. I could find no clue in the quantity or quality of feed that promised to lead to a solution of the difficulty. On investigation of the water supply, I found that most of the animals on the farm drank from a small creek that ran a zig-zag course through the premises. The stream was in part supplied from a series of springs, and in ordinary seasons afforded a fair amount of water, which ran, at least for a portion of its course, over a gravelly bed. The present dry summer, with several previous ones showing an abnormally light rainfall, has so reduced the amount of water that it had ceased to run. On making examination and conducting inquiries, I ascertained that it had been the custom on the farm to throw the carcasses of animals down the steep bluffs into the bed of the stream. I further learned that during the summer, chicken cholera had prevailed on the farm, and that a large number of chickens had died and been thrown over the bank. I was also informed that the hog cholera had caused the death of a considerable number of swine, the carcasses having been treated in a similar manner. The several

yards occupied by horses, cattle, pigs and barn yards fowls were on the hillside, with abrupt drainage into the creek. In addition to this, large heaps of fermenting manure were deposited about the foot of the hill near the edge of the stream, where the animals went to drink. A few of the animals on the farm had not had access to the stream, but had been watered from a well. None of these had showed signs of sickness, though they had been in daily contact with those that had their water from the pools in the bed of the stream, and even with some of the sick. On looking up the local geography of the neighborhood, I found that a number of farmers had built their homes along the banks of this stream, and had been accustomed to make use of it in much the same way as the farmer above referred to. Inquiry elicited the fact that on no less than four farms situated on the banks of this stream, animals had died showing symptoms identical with those on the farm first investigated. I regarded the evidence as sufficient to make out a strong case against the impurity of the water and gave an opinion accordingly.

The above is but a single instance out of many that have come under my observation. It is one of the most glaring, but by no means one attended with the greatest degree of loss. On another occasion where a high rate of mortality had prevailed among the cattle running on the open prairie, I was able to trace the cause to contamination of surface water. An animal dead from anthrax had been drawn into a basin on the open prairie. Later the rains filled the basin with water, and about one thousand cattle on the range had access to the pond for water supply. The result was that about ten per cent. of all the animals having access to the impure water died from anthrax. The teachings of these object lessons are sufficiently obvious. These animals are endowed with organizations not unlike our own, and the manifest laws of being and of health can no more be violated with impunity by them than by ourselves.

DR. TAIT BUTLER, of Iowa, has recently accepted the chair of Veterinary Science in the Mississippi Agricultural College.

THE RELATIONSHIP EXISTING BETWEEN HUMAN AND BOVINE TUBERCULOSIS.

By PROF. E. F. BRUSH, M.D., Mt. Vernon, N. Y.

(Continued from Vol. XIV, page 696).

We have well-authenticated statements respecting another semi-civilized race, the natives of Great Kabylia, who, according to Hirsch and Evans and other authorities,* enjoy an almost absolute immunity from phthisis. According to the best authorities I could consult as to the history of the people, there is no evidence of the presence of the bovine tribe among them, but they possess large flocks of sheep and goats, and each family has usually one buffalo ox to do the plowing.† As these are a peculiar people, with peculiar ideas and peculiar habits, not calculated to encourage visits from European invalids, they retain their immunity from phthisis to the present day. But not so with their neighbors, the Algerians. This country, having been occupied for over half a century by the French, has been therefore rendered sufficiently civilized to offer an asylum for European invalids. When first occupied by the French, the country was exempt from phthisis, and, of course, the publication of this fact drew to it many consumptive invalids. The dairy cow was unknown in Algiers before the French conquest. There were innumerable herds of buffalo, indeed; but the French in vain offered a premium of fifty francs a head for the importation of dairy stock.‡ Up to 1854 they were unsuccessful, all these attempts proving futile. In the latest statistics from that country we find the largest proportion of deaths from phthisis among the European civilized residents.§

Dr. Scoresby Jackson makes the following remark about Algiers: "It is not necessary to prove the absence of pulmon-

* Armand, "Méd. et Hygiène des Pays Chauds," Paris, 1853, p. 375. Borthaud, "Méd. et Hyg. des Arabes," Paris, 1855.

† Daumas. "La Grande Kabylie." Morell, "Algeria," 1854.

‡ Morell, "Algeria," p. 477.

§ Jackson, "Medical Climatology," p. 138.

ary consumption from the natives of a country in order to demonstrate the beneficial influence of its climate upon those so affected from other countries. It would be difficult to find such a place, . . . but Algiers, at all events, approximates such a condition."

There are many other countries furnishing statistics of death-rate from phthisis where the disease is not indigenous but due to importation. I think' this can be said of Greece. According to Roser * and Olympios, the disease is very rare in that country, and Edmond About, in his book on "Greece and the Grecians," tells us that "the town of Athens possesses only five or six cows; no other milk is drank than that of the sheep; their butter alone is eaten. They eat meat but once a year. The entire population eats meat at Easter for the whole year,"† and this meat is lamb.‡

In studying the relations existing between the human and the bovine races I find that religion plays a prominent part. Thus, in India, with the Mohammedan, Brahmin and Buddhist religions, but where, as a rule, dairy cattle have not been domesticated, there was undoubtedly an absence of phthisis before the English occupation. Hence, to-day we find all statements regarding the presence of tuberculosis uncertain. Thus Hirsch§ says: "So also in India the prevalence of phthisis cannot be given in figures. It is, on the whole, rarer in that part of the world than in the temperate zone of the Eastern Hemisphere, but by no means so rare as the earlier observers supposed from their imperfect means of diagnosis." Now, here is that expression of the feeling of doubt and uncertainty which we find in many works relating to this elusive disease. A man of scientific ability goes to a country and finds no phthisis among the inhabitants. After some years under circumstances that change the habits of the people, he begins to find phthisis, and therefore imagines that he was mistaken

* Roser, "Ueber einige Krankheit, des Oriats," p. 79. Olympios, "Corresp. bayerischer Aérzte," p. 181.

† Edmond About, "Greece and the Grecians," p. 33.

‡ *Ibid.*, p 102.

§ Hirsch, *op. cit.* vol. iii. p. 185.

in his first observations. We find this taking place in Australia, Algiers and Greenland. In India this vacillating expression, of doubt is easily accounted for. When the English first occupied the country, the only cow they had was the small Hindoo variety, not related to our dairy cow, and this animal was and is an object of veneration, and the milk used in the country was derived from the buffalo. All the Buddhists and many of the Brahmin castes abstain from the use of meat in any form. Ansell, an early writer, says: "It appears that tuberculosis is correspondingly non-existent in certain localities in India." Now, there is a constant change always taking place in such a country as India. Prejudices are dying out and many of the people have undoubtedly adopted the habits of their conquerors. The English dairy cow is slowly but surely finding her way into India, or as Mair, a deputy coroner of Madras, says: "Beef is not at all times procurable, but is generally sold about once a week in every station where there is a sufficient number of Europeans to render the slaughter of an animal worth the butcher's while, for little beef is used among the natives. Occasionally the slaughter of a fine English stall-fed cow is advertised. In some districts the sale of beef is prohibited by law, out of respect for caste prejudices. Butter is an article difficult to procure of good quality, except on the hills, where it is sold by European settlers, who make dairy-keeping contribute to their support. The native tendency is to palm off buffalo butter for that made of cow's milk." There is little doubt that when the English dairy system becomes well established in India, the statistics of phthisis will be uniform and undoubtful. Of course, the Buddhists and Brahmins will be the last to adopt the dairy cow as a food producer.

Geographical and climatic conditions have little, then, to do with the prevalence of tuberculosis. There are undoubtedly conditions of climate, habitations, etc., that favor the development of the disease, if the contagium is present; and the contagion, I think, is always derived *primarily* from the dairy cow. The Kirghiz inhabiting the steppes of Russia, one hundred feet below the sea-level, with a rigorous clime, intensely

cold winters and warm summers, badly housed and fed during the long months of cold weather, have no dairy cows, and enjoy an entire absence of phthisis. Take, as nearly as we can get, a diametrically opposite geographical and climatic condition, and we find Quito, the highest city in the world, situated ten thousand feet above the sea-level, located at the equator. "No torrid heats enervate the inhabitant of this favored spot, no icy breeze sends him shivering to the fire." "The mean annual temperature is 58 deg., the extremes 45 deg. and 70 deg. F."* Now, we have quite positive and authoritative statements regarding this city. Professor James Orton, of Vassar College, who made a scientific expedition to the equatorial Andes in 1867, under the auspices of the Smithsonian Institution, says, at Quito, "suddenly we are looking down into the valley of Chimbo; there are herds of cattle and fields of grain, yet we shall not find a quart of milk or a loaf of bread for sale. Thousands of cattle are raised on the Paramos, but almost wholly for beef. A dislike to milk (observed by Humboldt), or at least an absence to its use before the arrival of Europeans, was generally speaking, a feature common to all natives of the new continent. Some cheese, mostly unpressed curd, and a little butter, are made, but in the patriarchal style; only one American churn is in operation (in Quito, with a population of 80,000). The people insist on first boiling the milk, and then stirring it with a spoon; custom is omnipotent here, and its effect is hereditary." Professor Orton further says: "Consumption is unknown in the city." The testimony is unanimous that phthisis does not exist in Quito, but on the plains in Ecuador, according to Dr. Archibald Smith, who practiced there for twenty-five years, "the disease is not uncommon."

Professor Orton, after leaving Quito and traveling toward the Amazon, makes the following observation, which clearly indicates that the dairy cow exists in other parts of this country: "The following day we advanced five miles to Tablon, an Indian hamlet on the mountain-side. There we waited

* Orton, "Andes and Amazon," p. 92.

over night, and this was the only spot in South America where we found milk to our stomachs' content."

Without going into further details respecting separate communities, let us consider the statistics of Europe, and there we find that the prevalence of phthisis is regulated by the ratio of the bovine to the human race. Thus, in Ireland, where the cattle number 4,570,000, nearly an equal proportion to that of the inhabitants, according to Dr. Wylde, phthisis is by far the most fatal affection to which the inhabitants of that country are subject. Denmark, with about the same ratio of cattle to inhabitants, sustains about the same rate from consumption. In Portugal, where there are six inhabitants to one bovine animal, consumption attracts so little attention that few notices can be found relating to the disease in that country. In Italy, the distribution of cattle being one to six inhabitants, the mortality from phthisis varies greatly in different parts of the country, reaching the exceedingly low rate of 0.86 in a thousand in the Basilicata. In Egypt, where the ratio is one animal to nearly thirty inhabitants, Pruner tells us "that the disease becomes less in exact proportion as we proceed southward from the shore of the Mediterranean. In Central and Upper Egypt it is decidedly uncommon."*

Thus the statistics go on, and where the exceptions arise, the cause is always evident in the conditions that influence the breeds of cattle. Taking into consideration all the foregoing facts, there can be little doubt that the inbred species of the bovine race is the prime ætiological factor of phthisis in the human race. They not only nurse the germ and prevent its extinction, but sow it in the human race continually and abundantly; without their aid the germ would die, for of all the germs known none have so hard a struggle for existence in the human kind as the bacillus of tubercle, when we consider the comparatively few of the human race who are afflicted, and the immense number who are exposed to the infection and escape it.

* Hirsch, p. 192.

The cow is the only known animal that has transmitted tuberculosis to her offspring in inheritance. I am fully aware that this statement will meet with considerable opposition, as many of our best workers are of opinion that bacillary phthisis is hereditary in the human race. But I have concluded that this is merely a theory, because, after diligent search, I have failed to find a well-authenticated case on record of a human foetus at term showing evidence of tuberculosis. We have, however, on record in the "Fortschritte der Medizin," No. 7, Vol. III., 1885, a case given by Johne of congenital tuberculosis in a foetal calf of eight months, and in Crookshank's "Manual of Bacteriology" (plate 18), is a stained illustration of the bacilli from this undoubted case. Just in the line of this hereditary tendency let me narrate an experiment of my own. Last summer I took the entire lungs and all the largely involved lymphatic glands from a cow dead from acute miliary tuberculosis, and, confining five laying hens and a cock, fed them exclusively on this matter till it was all consumed. I found after eight days one of the hens, which I killed, had tubercular affection of the layngeal glands; I took twenty-six of the last eggs laid by these hens and put them under two sitting hens in another part of the farm. Twenty-three of these eggs developed foetal chicks, but not a single one lived to come out of the shell. Two or three days after the period of incubation had expired, the hens themselves broke the eggs, but every chick was dead. I took some of the eggs that I had not used for setting to the Carnegie laboratory, and Dr. Grauer searched diligently for the bacillus tuberculosis, but failed to find any. He found, however, the presence of the germ in the lymphatic glands of the hen I had killed; he now has some of the chicks, but I have received no report from him as to their condition. Of the four remaining hens and cock, some one stole the latter when he was apparently quite ill, three of the hens died extremely emaciated, notwithstanding that they had abundance of good food after they had finished the tuberculized matter, and the remaining hen was killed by the burning of the building in which she was confined. This experiment needs confirmation by further experi-

mentation. I had no idea that the eggs would not mature, or I should have placed with them under the same hens eggs from healthy birds; there was no appreciable cause in the surroundings or other conditions to prevent the hatching except the before-mentioned tubercular condition of the layers. I shall repeat this experiment, using eggs from healthy birds with those from tuberculous layers.

Without knowing that the fact is so, I have been looking up statistics of zoological gardens, and find that tuberculous animals fail to breed while in confinement. Of course we have no means of knowing how they behave themselves in their wild state, but I feel pretty safe in asserting that no one ever found a wild animal with tuberculosis. Darwin's statement while writing on inheritance—"that, unfortunately, it matters not, as far as inheritance is concerned, how injurious a quality or structure may be if compatible with life"—only applies to the human race and animals which the human race is instrumental in breeding. To such animals, bred by the human race, Darwin applies the term artificial. We all know that in cattle one that is injured or unable to follow the herd is killed by the herd, and bulls in their wild state only maintain their supremacy by their vigor. The moment the head of a herd suffers from age or disease he is put away by the next strongest, and thus the vigor of the herd is preserved by this law of the survival of the fittest.

Man cannot generate new forms, but he can so control and interfere with nature's processes as to modify the original design. Inbred cattle are selected, sheltered, and pampered, as they would be unable to withstand the rigorous conditions of the wild state: they propagate earlier and are larger milkers and more efficient beef-producers, and their meat is more delicate and tender than that of the wild animal. All this is achieved by man at the expense of his own health.

THE SOUTHERN VETERINARY SOCIETY, with Dr. E. R. Forbes, of Chattanooga, Tenn., as President, comes into existence at an opportune time, stepping forward into the ranks of scientific work when our whole country is alive and glowing with promise.

REPORTS OF CASES.

AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT.
BRONCHOCELE IN A POINTER—OPERATION BY ENUCLEATION—
SECONDARY HEMORRHAGE—DEATH.

By E. J. NESBITT, D.V.S., House Surgeon.

The patient was a male liver-colored pointer, about seven years of age, that in health weighed about seventy pounds, being very well developed. He had been in his last owner's possession ever since he was two months old. When quite young he suffered a severe attack of distemper, which, after having been cured, left him with a chorea of the diaphragm; this being perceptible when the animal was lying or asleep, but did not seem to cause him any inconvenience while at rest or at work. A few years later he was attacked with a skin disease, from which he never completely recovered. He had been used in the field, but most of his time was spent around the house. A large papiloma made its appearance in the left axillary space and was removed by a veterinarian about one year ago. To do this the animal was put under the influence of chloroform, but had difficulty to rally from it. The papilloma returned a short time after, and at the time of death was about the size of a small egg. The bronchocele, for which he was brought to us, first began to manifest itself June 6th, 1891. Since that time it had *gradually* increased in size up to ten days ago. Then it grew very rapidly. On examination we found a tumor about the size of a man's closed fist, situated at the base of the neck just anterior to the point of the left shoulder. This was readily movable and not painful to the touch. Since the first appearance of the enlargement the dog has gradually become dull and sluggish in his habits; this attracting the owner's attention because he was naturally wide awake and very active, and now did not care to do anything but to lie around the house in a sleepy manner. The slightest exertion would weaken him in a very short time; so much so, that if he walked five or six blocks a rest was necessary. Appetite was good and all the functions of the body normal.

Operation. The animal was secured and placed on a table, and the hair was removed by shears from the enlargement. A ten per cent. solution of cocaine was injected at the four points of the tumor, the latter was then thoroughly washed with a one to one hundred solution of creoline, and then with a one to one thousand solution of bichloride. After allowing time enough for the cocaine to have its full action established an incision over the most prominent part of the tumor was made from upwards downwards. The skin was then dissected back and the cellular tissue separated from the tumor, the blood vessels supplying the gland being then with some difficulty ligated and severed. Having done this the body was easily removed from the cavity, which was thoroughly cleansed with a solution of bichloride and the edges brought together by the interrupted suture; a soft pad of oakum was then laid across the wound, held in place by a bandage suitable to the part. He was then placed in a large kennel and offered some bread soaked in milk, of which he ate sparingly, but took freely of water. During the night following the operation he suffered some pain, which was shown by an occasional moan. The next day he appeared very bright and could move easily without assistance. The wound was dressed and looked very well, discharging but very little and granulating very nicely, his temperature being 102° F. The next day his temperature was 103° F.; otherwise he appeared very comfortable, eating well and moving easily. The third day after the operation his temperature had risen to 110° F., would not eat anything, was very dull and did not care to do anything. He was given two drams of whiskey in the morning and later two ounces of milk punch every two hours. The morning of the fourth day came and with it trouble, for some time during the night he rubbed the wound against the door-post of the kennel, giving rise to a profuse hemorrhage which very much debilitated the animal. His pulse was very weak and hardly perceptible. The hemorrhage was controlled by pressure; milk punch was given often. The hemorrhage weakened him so much that he was unable to stand without assistance. Notwith-

standing all our efforts death seized him Monday, July 13th, at two o'clock in the afternoon.

The tumor was irregularly elliptical, flattened from side to side, measuring nine inches in its longer and seven and one-half inches in its shorter circumference, weighing five ounces and five drams. On cross section through its longer diameter an empty sac was found in the center of the body capable of containing about one dram. Through the middle ran a band of dense tissue that separated a lighter colored and less dense from a darker colored and more dense portion.

On post-mortem the alimentary was found to be normal; stomach containing milk punch, and the rectum contained normal fæces. The liver was slightly enlarged, weighing about two and one-half pounds, normal in color and consistency. Gall bladder was distended with bile. The lungs and heart were normal, as were the kidneys and ureters. The bladder was greatly distended, containing 18 ounces of normal urine.

THORACIC JABOT—SUPPURATIVE PNEUMONIA—DEATH.

By E. B. AOKERMAN, D.V.S., House Surgeon.

The subject of this paper was a bay gelding, twelve years of age, used altogether as a saddle horse, to attend which I was called on Sunday, May 31, 1891, at 6:30 A.M. He had eaten most of his breakfast, which consisted of whole corn on the cob, when he was taken with a violent fit of choking. When I arrived the patient was lying down, and covered with perspiration from his exertions, every few minutes having spasms of the muscles of the neck with violent choking, and a discharge from the nose mixed with chewed food, with a regurgitation or wave-like motion running up the œsophagus.

Diagnosed case of choke caused by corn cob, which I was unable to detect in the cervical portion of the œsophagus, and suspected pharyngeal or laryngeal choke. Tried horse with water, but he would not drink. Introduced speculum in the mouth and made an examination of the throat; found

the epiglottis turned completely over, having passed between the two arytenoid cartilages. This I corrected by putting one finger under it and turning it over to its normal position. Thought that this might be the cause of choking, but as soon as I took my hand out of his mouth he had the same symptoms as before mentioned. Then made up my mind the obstruction was lodged in the thoracic portion of the œsophagus, so I administered linseed oil with a horn very slowly. This he swallowed without coughing until I finished, when he made one good cough and some returned through his nostrils. Put horse back in his stall and he laid down immediately; watched him about ten minutes, during which time he was very quiet, and without any more coughing; then went to breakfast; told the man to watch him while I was away; returned in three-quarters of an hour and found him standing up; the man said he had been very easy; watched him for a few minutes; he seemed to be all right and was drying off, so I discharged him, at same time telling the stableman not to feed any more corn.

I was called again on Tuesday morning to see the same horse, with history that he had left his feed that morning and was quite sick. On examination found horse had a temperature of $103\frac{2}{5}^{\circ}$ F., pulse 68, respiration 70; visible mucus membranes congested; prune-juice discharge from nostrils; auscultation and percussion showed pneumonia of the left lung. Advised owner to send him to hospital, where he arrived about 4 P.M. He then had a temperature $104\frac{2}{5}^{\circ}$ F., pulse 76, respiration 76, and labored, the membranes congested, the discharge from the nose was mixed with blood, horse hung his head almost to the ground, and was very weak. Auscultation showed increased respiratory murmur in the upper part of each lung, and a complete loss of it in the lower portion about one-third way up. On percussion got a straight line of flatness about same distance up; very slight fetid odor to breath; took the temperature again at night before retiring; it had risen then to 105° F., and the pulse was so fast and weak could scarcely count the beats. The fetid breath had now become well marked. From 10:30 A.M. to 11 P.M. the temperature had risen $1\frac{3}{5}^{\circ}$ F.,

the pulse increased about thirty, and the breath had rapidly become offensive, showing how rapidly the disease was advancing. The patient also laid down several times during the night, staying down only a few minutes at a time.

Wednesday morning patient was still worse. Temperature $105\frac{3}{5}^{\circ}$ F., respiration 72, and labored, and the pulse I could not feel at all; animal was very weak; nostrils dilated; hæmoptisis, groaned every few minutes, gnashing his teeth at the same time; profuse perspiration; getting up and lying down, and when standing did so with the posterior extremity braced up in the corner of his stall, continually looking around at his flank, *altogether showing symptoms of severe pain*. Horse laid down about 10:30 A.M., and was unable to get up; he then died in a few minutes.

On post-mortem examination, commencing with the respiratory track on account of the disease, we began with the larynx, which was perfectly normal; the mucus membrane of the trachea in the upper portion was congested, and in the lower third gangrenous. On opening the thorax there was a large escape of dirty serum with a very bad odor. The pleura was thickened, soft and ragged. The anterior portion of the right lung was gangrenous; the superior portion of the posterior part was in the stage of red hepitzation, and the balance congested. The left lung was nearly all broken down. On separating the lungs there appeared an elongated body, which at first sight was taken for a piece of intestine. The heart was ænemic and slightly soft, the fat around it very yellow and echymotic.

Beginning again I took up the alimentary canal. Found the pharynx normal, also the œsophagus down to within a certain distance from the diaphragm, when it suddenly became very large. It was this enlargement we had mistaken for the intestines, but on closer examination it proved to be a large jabot, the muscular coat of which was very thick on its superior face (the original œsophagus), while the inferior part was very thin. It made a pouch equal to a small stomach, being fourteen inches long and thirteen and one-half inches in circumference; it was completely filled with water and ground

feed, separated from the stomach by a kind of constriction or ring formed by the muscular coat of the œsophagus. This was the cause of the choke for which I was called in, as the food massed in there and could only get into the stomach with difficulty. The stomach was about twice its natural size, with its coats very much thinner than normal. It contained a little fine feed and a large quantity of water. The liver and spleen were normal in size and shape. The liver was of a yellow color, easily torn and soft, while the spleen was a bright, beautiful green and very soft.

The interest in this case rests in the presence of the pneumonia, which assumed so rapidly a very active and fatal issue, promoted by one or both irritating causes. First, the presence and size of the jabot; and second, possibly the accidental introduction of a small quantity of oil into the air passages.

EXTRACTS FROM FOREIGN JOURNALS.

CEREBRAL APOPLECTIC STROKE IN THE HORSE.

BY M. L. MAGNIN.

This case being the second of the kind observed by the author in six years' practice, that fact has led him to the conclusion that the accident is one of no uncommon occurrence. A mule, while being exercised in a ring, jumped over an obstacle scarcely three feet high, and instead of alighting on his fore feet, fell forward on his head, striking the ground with the superior part of the skull, and then, making a complete summersault, died instantaneously.

The post-mortem showed no indication of any fractures, complete or incomplete; no ecchymotic spots appeared in the subcutaneous cranial cellular tissue; and the meninges had a normal aspect. But on the floor of the fourth ventricle, towards the right corpora rectiforma, appeared a rough and irregular longitudinal laceration, with an ecchymosed border, beginning near the calamus scriptorius, and ending in front of the mezzoccephalon; narrow behind, it increased

in depth and in width towards the front, where it involved half of the thickness of the bulb. Sections through the cerebral substance surrounding the fourth ventricle showed a reddish injection, more marked in some parts than in others. All other parts of the encephalon were perfect — *Journal of Zootechnie*.

A CASE OF THORACIC ECTOPIA.

BY M. LOUIS BLANC.

The fact that thoracic hernia is not uncommonly found at post-mortem inspections, is a familiar one to practical pathologists, and whether these are ante or post-mortem, is a point of great interest to the practitioner. The following will add to the list of cases already on record.

An old horse was destroyed for anatomical purposes, no care having been taken to ascertain what his condition had been during life. Upon opening the abdomen, abnormal appearances became at once evident, in the disposition of the large colon. Upon removing the circumvolutions of the small intestines, while the first and the fourth portions of the large colon were exposed, both of the two central portions had disappeared. There were, however, extensive adhesions of these portions to the posterior face of the diaphragm. On opening the thorax, the other two portions were found in that cavity, presenting in their disposition a peculiar twisted arrangement around the posterior vena cava.

The opening of the diaphragm through which the hernia took place occupied the whole upper portion on the right of the aponeurotic center, being bounded inwardly and downwardly by the pillars of the muscle and the vena cava, and outwardly and upwardly by the muscular portion of the diaphragm. It measured between eight and ten inches in its great axis. The edges were regular, smooth and rounded, and showed that the muscular and tendinous fibres were not torn or lacerated, but had deviated from their direction, in such a manner as to bind the borders of the hernial opening.

This condition was evidently of old standing, probably congenital. The animal affected with it had borne it for at

least twenty years without any apparent interference with his ability to perform his work.

SEVEN CALCULI IN THE ABOMASUM OF A HEIFER.

By M. CH. TYVAERT.

A heifer and an ox were both affected with symptoms of tympanitis, for which they received similar treatment. This relieved the ox, but the heifer, notwithstanding the administration of a second dose of medicine, continued to grow worse. When seen by the author the following symptoms appeared: The animal was lying down, pulse weak and accelerated; respiration short and irregular; nose dry; ears and horns cold; head extended on the neck; face dull and anxious; eyes dull and widely open; salivation abundant; rumen not distended. She was killed, and at the post-mortem the entire organism was found perfectly healthy except that in the abomasum, embedded between the second and third stomachs, a mass appeared, resembling cork, of seven calculi, perfectly moulded on each other's surface and bound together with organic matter, and interfering with the passage of the food into the fourth stomach.—*Ann. de Med. Vet.*

PSEUDO RABIES OR ECLAMPSIA IN COWS.

By M. VAN PASSEN.

Whether correct or not in his nomenclature, the author reports his cases as unusual and interesting, from their connection with possibly true rabies. A cow four years of age three hours after delivery became suddenly sick. At first she was uneasy and restless, then suddenly exhibited the following appearances: The body became rigid; eyes staring; head extended and resting on the manger; grinding the teeth; jaws moving as if chewing; abundant salivation. After a few minutes these symptoms relaxed and the animal micturated profusely; then in a frenzied manner she licked the right stifle region, the leg of the same side striking on the ground. There was no wound or cicatrix on the body; the temperature was normal; the pulse and respiration were slightly

accelerated; the milk was still secreted; the appetite and rumination were normal, as were urination and defecation. The attack was followed by another several hours after, and by a third an hour or two after. The light never incommoded her and she was indifferent to the sight of a hen. Two days later she was entirely well with the exception of the irritation at the stifle, which was gradually subsiding. Some days later the author was called to another case, also of a cow, four years old, that had calved three days previously, and had cleaned and was in full milking condition. She was agitated and uneasy; struck her horns right and left; licked her left fore-arm; salivated abundantly; bit surrounding objects; her back was arched; her urine scanty and expelled by strong expulsive efforts; fæces hard and coated. As in the other case the temperature, respiration and pulse were normal. After two successive attacks the animal recovered her normal condition and became entirely well. The treatment was symptomatic and expectant.—*Ann. of Med. Vet.*

CONTRIBUTION TO THE HISTORY OF FRACTURES—FRACTURE OF
THE ORBITAL PROCESS IN A HORSE—IRREDUCTIBILITY
—TREPHINING—RECOVERY.

By N. F. HENDRYX.

A mare, eight years old, while going down a stiff hill fell, and striking against a lamp-post, received a severe contusion upon the head. When seen she had a wound over the right superior eyelid on a line with the orbital process. The eye was almost entirely closed by thickening of the lids, as by the dropping of the bony apophysis. There was a fracture close to the temporal angle of the eye. The conjunctiva was torn by the sharp edge of the bone. Failing to reduce the fracture by external manipulation, the author decided to trephine the right frontal sinus, and by the aid of an iron lever succeeded in raising the fractured process to its normal position. The wound was well disinfected and its edges sewed together, and antiseptic dressings were applied over the parts. Everything proceeded favorably with the exception of the infiltration of the cornea, which was rather tedious to remove.

Some four months after a small slough of bone was removed from an abscess which had formed at the seat of the injury.—*Ibid.*

COMPOUND-COMMINUTED FRACTURE IN A BITCH—AMPUTATION—RECOVERY.

BY THE SAME.

A fox terrier bitch three years old, of great value, while attempting to bite a horse, received a kick which sent her under the wheel of a heavy cart, which passed over her right fore paw. There was a fracture of the radius and cubitus a little above the knee, and amputation was decided upon. The whole leg was thoroughly washed with bichloride solution, (1 to 1000), a ligature was placed on the lower extremity of the fore leg, to hold it in proper position, and a circular incision made about the middle of the fore arm, and the skin dissected, in order to preserve sufficient material for a lap covering the stump of the leg. The muscles were divided, the bones of the fore arm sawed off, the skin brought over the lower parts of the leg and a thorough antiseptic dressing applied, to be left in place until the fifth day. When it was removed it exposed a wound in full process of cicatrization, and three weeks later the wound was entirely healed. She has since then become the happy mother of a litter of seven pups, perfect in health and condition, and mother and children are doing as well as can be expected.—*Ibid.*

QUINTUPLE PREGNANCY.

By J. LAITHWOOD, F.R.C.V.S.

On the 3d of May I was called to attend a well bred shorthorn cow in labor, but arrived at the scene of action too late to be of assistance to the mother. The cow had eaten a quantity of cabbage, which had caused tympanitis. A post-mortem inspection revealed five well grown calves, four bulls, and one cow, all well nourished, and lacking about three weeks of their proper time of birth. The calves all looked like living, if they had had the chance.—*Veterinary Journal.*

RECTO-VESICULAR FISTULA IN A HORSE—RECOVERY.

By J. A. NUNN, D.S.O., F.R.C.V.S.

The patient, an aged cob, was an inmate of the Lahore Veterinary College, the owner stating that the animal passed his urine through the rectum. He was in a miserable condition and much distressed. The temperature was 102° ; pulse, 54; respiration quickened, thigh and perinæum excoriated by the dribbling of urine and fæces from the anus. The penis was much inflamed and swollen, with a sloughing ulcer on the glans, and about a pint of pus collected in the sheath. The mouth of the urethra was much constricted, and this stricture being divided with a bistoury and a catheter passed, a second stricture was found back of the first, and passed through, with careful pressure. The catheter was thus passed into the bladder and two or three ounces of urine drawn off. The repeated introduction of the catheter every few days was after awhile rewarded by the return of the normal flow of urine through the urethra. The animal during that time received simple antifebrile treatment and local anodyne suppositories. The sore on the penis was healing. In this case, says the author, the fistula was due in the first instance to the stricture of the urethra, causing retention of urine, which accumulated and ruptured the bladder at its upper surface, that viscus opening into the rectum, the stricture in all probability being the result of irritation caused by the sore on the penis.—*Ibid.*

DISLOCATION OF THE SHOULDER OF A MARE SUCCESSFULLY TREATED.

By ROBERT GIBBS, M.R.C.V.S.

This accident is not a common one, and the favorable result obtained in this case may be of service as an addition to the history of similar injuries.

A well bred mare running almost a dead heat with another, suddenly fell. On rising she was found to be exceedingly lame, the front of the shoulder joint being swollen, and the leg three or four inches shorter than its fellow. It was evident that she

had suffered a dislocation of the shoulder. She was removed the next day to the author's infirmary, and the shoulder fomented in order to soften and reduce the swelling. That being accomplished, and the animal being chloroformed, she was thrown. A band was put around her body at the saddle place, a three block pulley made fast to the leg above the fetlock, and two men with steady and continuous traction upon the fixed pulley gradually extended the leg, until all at once the joint returned to its normal position with a loud shock and report like the explosion of a small pistol. When the effects of the chloroform had ceased, the mare was walked into a loose box and has subsequently shown scarcely any signs of inconvenience from the injury.—*Ibid.*

AMPUTATION OF THE PENIS FOR CANCER.

BY J. K. CALDERWOOD, M.R.C.V.S.

A bay gelding, eight years old, had a discharge from the prepuce for some time, but no notice was taken of the condition. When assistance was called there was difficulty in urinating and loss of flesh. On examination it was found that at the end of the penis there was a large tumor, which extended into the urethra, affecting it for some distance. As the stench was unbearable, and the growth spreading rapidly, an operation was decided on, which was carried out as recommended by Prof. Williams in his "Surgery."

The most difficult part of the operation were to prevent the withdrawal of the penis, and to check hemorrhage. Although the penis was very tightly ligatured after the amputation, it was withdrawn before the arteries were satisfactorily secured. The safer way, the author thinks, is to pass the ligature through the substance of the organ. The bleeding in this case was profuse, but eventually overcome by cold water applications. The growth examined was cancerous in nature.—*Veterinary Record.*

DISCOMYCES EQUI.

BY F. I. HARVEY, M.R.C.V.S.

The subjects of this article are a mare and a colt, which

both presented affection of the inguinal genital organs, due to the presence of this fungus.

In the first case it was a mare which had an enlarged udder of long standing, at first considered as one of scirrhus cancer. The growth was very hard, with abscesses forming and discharging, but yet with that exception without cutaneous ulceration. The treatments of tonics and iodine externally, and occasionally iodized phenol, failed to give relief, and the disease spread, involving both udders. Injections of iodine into the substance of the growth were then administered, using one or two drachms of tincture of iodine, with a half-per-cent. solution of carbolic acid. Three injections of ten drachms were employed every third day. The quantity was gradually increased and a longer time allowed between each injection. In a month's time all suppuration had ceased, and the œdema gone. The mare made a good recovery.

The second case was that of a colt which had contracted the infection about a year before, developing into a scirrhus cord. On account of peculiar reasons, the operation was postponed for a while, and the two cords removed afterwards. But in a few months the horse was as bad as ever. Two or three sinuses had opened on the right flank, and were discharging freely. Though a second excision was made the growth kept on increasing, and ultimately the colt had to be destroyed.

In the examination of the structure of the two growths, and especially of the discharge, made by Prof. McFadyean and Prof. Arxe, their correct microscopic nature was determined.—*Ibid.*

SOCIETY MEETINGS.

JOINT SESSION OF THE OHIO AND MICHIGAN STATE VETERINARY ASSOCIATIONS.

WEDNESDAY, JULY 22d.

Meeting was called to order at 8:20 P.M., July 22d, by Dr. Hawkins of Detroit, who in a few words stated the object of the meeting, and that the first business in order was the election of a Chairman and a Secretary.

Moved and seconded, that Dr. E. A. Grange, of Lansing, Mich., act as Chairman. Carried unanimously.

Dr. Grange, on taking the chair, thanked the meeting for the honor conferred upon him, and hoped the session would be an enjoyable one to all. The meeting was more of a fraternal nature than of a business one; that we would form some new acquaintances, and at the same time we had a few papers to discuss; but first let us proceed to elect a Secretary.

It was moved and seconded that Dr. W. H. Gribble, of Washington C. H., Ohio, Secretary of the Ohio Association, act as Secretary. Unanimously agreed to.

There was found to be present: Dr. E. A. Grange, Lansing, Mich.; Dr. Jos. Hawkins, Detroit, Mich.; Dr. J. J. Joy, Detroit, Mich.; Dr. S. Brenton, Detroit, Mich.; Dr. Jas. Fleming, Detroit, Mich.; Dr. W. J. Bracken, Fenton, Mich.; Dr. W. B. Austin, Milford, Mich.; Dr. J. W. Ferguson, Bay City, Mich.; Dr. J. C. Whitney, Hillsdale, Mich.; Dr. Geo. Dumphy, Quincy, Mich.; Dr. Dell, Ann Arbor, Mich.; Dr. Thaborne, Lansing, Mich.; Dr. Smith, Adrian, Mich.; Dr. A. J. Thompson, Terre Haute, Ind.; Dr. J. W. Wilson, London, Ont.; Dr. J. W. Gibbs, St. Mary's, Ont.; Dr. J. C. Meyers, Sr., Cincinnati, Ohio.; Dr. J. V. Newton, Toledo, Ohio; Dr. W. R. Howe, Dayton, Ohio; Dr. W. Shaw, Dayton, Ohio; Dr. T. B. Hillock, Columbus, Ohio; Dr. W. E. Wight, Delaware, Ohio; Dr. J. Charlesworth, Springfield, Ohio; Dr. T. B. Cotton, Columbus, Ohio; Dr. E. B. Barnett, Akron, Ohio; Dr. C. Christman, Akron, Ohio; Dr. J. E. Campbell, Alliance, Ohio; Dr. W. H. Gribble, Washington C. H., Ohio.

Communications were read from several members of both Michigan and Ohio Associations, expressing their regrets at inability to be present.

Mr. Russel, in behalf of Parke, Davis & Co., offered the Association a stenographer for to-morrow morning if they needed one.

Moved and seconded that the offer be accepted. Carried.

The Chair now enquired how we should proceed; he had visited several Farmers' Institutes, and had noticed that the Question Box had always proved interesting, and thought it would be a good plan to have one here; any member to drop a question in the hat, to be answered by the others. This subject was deferred until later.

Dr. Hawkins: As the Chair was Chairman of a committee that presented a bill to the Legislature, we would ask for information as to what disposition was made of it.

The Chair: I would suppose that to be a subject for the Michigan Association and not this joint meeting; but if desired, would give his report to-morrow morning.

The Chair: The first matter in order is three questions propounded by Dr. J. C. Meyers, Jr., of Cincinnati. The Secretary will now read them:

QUESTIONS.

- 1st. Has a cryptorchide or monorchide power of reproduction?
- 2d. Has any one present had any practical observations on this matter?
- 3rd. Have any of the gentlemen present ever examined the spermatie fluid from a cryptorchide or monorchide and found spermatozoon?

The third question was answered first, as no one present had examined the spermatie fluid of such animals.

J. C. Meyers, Sr.: All I know of such things is what I have read and what

I have heard others say: but my son desired practical experience on the question.

Dr. Torrence: What are we to understand from question No. 1? Many animals have one concealed testicle and one well developed. He well knew such to be reproductive. Had known one monorchide that was reproductive, and could not see why it would be otherwise, if the testicle was developed.

Dr. Meyers: The object of the question is to determine if animals with hidden testicles are reproductive; for instance, if animal be a double cryptorchide, or if the developed testicle has been removed, leaving the one that is undeveloped.

Dr. Wilson: I have known stallions where only one testicle was showing to reproduce, but have never known such to happen where both were hidden; and do not believe it can. Do not believe hidden testicles contain the power to reproduce. I mean in horses.

Dr. Wright: Have known cryptorchides to cover mares, but no colts resulted.

Dr. Duffy: Had kept one two years where only one testicle was visible. He had produced many colts, in fact, as many as other horses.

Dr. Hillock: Had known several cases of true cryptorchides to be used, and never knew one to be productive. I mean in the horse—but I have in bulls.

Dr. Torrence: Had known rams with no external sign of testicle to produce. Remembered a case in Canada of imported sheep, amongst which was one of this kind, and which resulted in a big law suit.

Dr. Gribble: Had removed one developed testicle from horse, and had afterwards allowed him to cover several mares with no result. Had afterwards removed other testicle. Had known many cases of the kind, and if no developed testicle, no foal resulted. Had known such bulls and boars to reproduce.

Dr. Duffy: I once held a post-mortem to determine the cause of death, and found one well developed testicle in the abdominal cavity. It appeared as well developed as if in the scrotum: could not understand why such could not reproduce, but this animal had never been known to. In his experience cryptorchide horses were unable to produce, but other animals were.

Dr. Howe: I have never known one horse to prove productive, and do not believe they can be.

Discussion closed, it being the sense of this meeting that horses with undeveloped testicles are not reproductive, but bulls, rams and boars often are.

Mr. Russel asked the privilege of the floor, which was granted. He stated that as representative of Parke, Davis & Co., he would extend to all an invitation to visit their laboratories, etc., and would have carriages at the door to convey the members there and return.

Moved and seconded that the invitation be accepted, and the hour of departure be 8 A.M. Carried.

The Chair: The next in order will be a description of a few interesting cases, by Dr. Gribble, under the title "In-Breeding and Monstrosities."*

DISCUSSION.

Dr. Shaw asked if these animals had raised other young.

Dr. Gribble.: Case No. 1 and No. 2 had a very fine calf this season from a different bull. Cases No. 3 and 4 had never been bred since.

* Published in this issue.

Dr. Ferguson should think any man of good common sense would know better than breed that way.

Dr. Charlesworth hardly thought the breeding had anything to do with it, as he knew two fast trotters bred just that way.

Dr. Hillock: A poor way to breed indeed, but I think Dr. Gribble's cases one of accident, rather than due to the relationship of sire and dam.

Dr. Brenton: In-breeding has produced some of our best stock, but thought the cases mentioned to be a little too much so.

Dr. Gribble: I would state that Case No. 4 stood at a rack eating hay, and never after my arrival made one single expulsive effort. I have never before met a case of that kind.

This subject was well discussed, and finally drifted into the subject of breeding.

Dr. Torrence: Has any member present ever had experience in the use of impregnators?

Dr. Brenton: I would like to know what an impregnator was used for anyway; there is no sense in it, for if os uteri be dilated sufficient to get in the impregnator then the spermatozoon could pass in.

Dr. Cotton: My experience has been that those mares that I have examined that would not breed have been too loose and large, instead of too small.

Dr. Howe had known mares bred time and time again to different stallions all to no purpose, when some old scrub horse would cover her once and get her with foal.

Dr. Thompson: This opening of mares, as it is called, is a great humbug. Every stableman thinks himself capable of performing it.

Dr. Gribble knew a barn where a stallion was kept, and sixty mares served this season. Groom had informed him that he had found it necessary to open up over forty of them. He charged fifty cents. Probably this latter fact had something to do with the necessities of the case.

Dr. Hillock could not see how an impregnator could be of any service at all, unless probably it be a mare with a loose, flabby cervix, and folds of the membrane fell over the os uteri.

Dr. Ferguson: Of course you will all admit that it is of service in some cases to expand the os, but if it be open large enough to pass in a lead pencil that was sufficient to bring about conception, and no expansion was necessary.

Dr. Charlesworth had used impregnators, and found them of no use whatever.

Dr. Thaborne could agree with the doctor who had just spoken, and he had also used them to no benefit.

Dr. Torrence had know a mare bred several times with no result. A. V. S. had examined the animal and claimed a ruptured uterus. He (Dr. Torrence) had also been called to examine, but could find no rupture but simply a corrugated surface at the junction of the fallopian tubes, due he thought to a former pregnancy. In his opinion, so far as the uterus was concerned the mare was capable of breeding.

Dr. Thompson: It is a recognized fact that spermatozoa will not pass over a congested surface, and from that cause the operation of opening up would be a detriment instead of a benefit.

Dr. Gribble : That may be so, but I was consulted in reference to a mare that failed to breed after repeated trials. I found an indurated cervix, and so informed the owner, who is a physician. He asked, "Do you veterinarians ever expand the os uteri as we do in human practice?" I told him, "Yes." He desired me to take the mare twenty-six miles, perform the operation and allow the stallion to cover her, and bring her back. On arrival at the place I smeared the parts with solid extract of belladonna several times, after which it became somewhat softer, and I losing patience at waiting concluded to use some force. How much force I did use I cannot tell, but suddenly something gave way, my hand passed into the uterus, and I was covered with blood. At no operation have I seen such a hemorrhage. Plugged the parts with pledgets of tow and glycerine, and stayed all night. Next morning we removed them, allowed the stallion to serve her twice, and led her home. No other stallion has ever been used, and to-day she has a very fine colt and is in foal for another. Think there was congestion enough in this case described.

Dr. Thompson : Your excessive hemorrhage relieved the congestion.

Dr. Newton : We have several stallions at our stables ; have used different kinds of impregnators, and known others to use them, and they are the most consummate humbug ever perpetrated on horse owners of to-day.

The Chair : It is getting quite late, though I am willing to stay longer. This discussion is quite lengthy, and all seem to agree that the so-called impregnators are nothing more nor less than humbugs.

Moved and seconded that we now adjourn until eight o'clock to-morrow morning, then to meet as per resolution carried earlier this evening. Carried.

THURSDAY, JULY 23d.

Met pursuant to agreement at 8 A. M. Carriages were in waiting and we were driven about three miles through beautiful streets, past palatial residences, to the laboratories of Parke, Davis & Co. This is an immense establishment, its size being far beyond our pre-conceived ideas. The buildings are built in the form of a rectangle, fronting on the Detroit river and occupying more than a square of ground. An open court is in the centre of the rectangle, so allowing excellent ventilation and arrangements for well lighted rooms. Their facilities for the manufacture and preparation of drugs are unexcelled, and such precautions taken to prevent mistakes that one is impossible.

The men of all the departments are trained and formed into a fire company. We were treated to an exhibition of their efficient service in case of fire, by the alarm bell being struck, when men came rushing from all directions, each to his allotted place, and in the space of a few seconds several streams of water were ready for the imaginary fire. The museum in the private office of the main building is alone worth the trouble and time of a visit to the place, containing, as it does, Eastern and Indian curiosities, war and peace implements, insects and animals, etc., etc.

Each gentleman present was presented with several samples of tablets specially prepared for hypodermic veterinary uses, and kindly requested to use them and favor the Company with a knowledge of the results derived therefrom.

Mr. Geo. S. Davis then invited the Association to visit his stock farm Claire-

view, situated about thirteen miles above Detroit and bordering on the river. He also tendered us the use of his private steam yacht "Caprice" to convey us to the farm and return. This cordial and welcome invitation was at once accepted, and arrangements made for the yacht to be at the foot of Taird street at 1:30 P.M.

Returned to Abstract Hall for the morning session of our meeting.

The meeting was called to order at 10:30 with Dr. E. A. A. Grange, of Lansing, in the Chair. Secretary, Dr. Wm. H. Gribble.

Dr. Howe arose to extend the invitation of Mr. Geo. S. Davis of the firm of Parke, Davis & Co., to all the gentlemen present at the meeting, to visit Mr. Davis' stockfarm, Claireview.

Dr. Shaw made formal report of the death, by drowning, of Dr. W. I. Broadus. The proper motion was made, supported and carried, that a committee be appointed to draft resolutions with reference to the death of Dr. Broadus, and to submit a copy of said resolutions to the family of the deceased. As such committee the chair appointed Dr. Shaw, Dr. Dell, of Ann Arbor, and Dr. Brenton, of Detroit, Dr. Shaw to act as Chairman of the Committee, and to present the resolutions as soon as convenient.

A communication was then read by the Secretary, from William Jopling, of Owosso, Treasurer of the Michigan State Veterinary Association, expressing regret at enforced absence.

Accepted and placed on file.

The Secretary then read a paper by Dr. Logan, of Bellefontaine, O., on Digestion. Moved and supported, that, owing to the absence of the essayist and that other papers have to be read before noon, discussion on this paper be postponed. Carried.

A paper by the Chairman, Dr. E. A. A. Grange, on the "Horse and His External Conformation"* was then read.

Motion was made that the paper be received and placed on file.

Dr. Gribble having previously been called to the chair, a long discussion there took place between all the members relating to the best way to give publicity to the paper of Dr. Grange, some favoring the sporting papers, while others were in favor of the professional publications. At the conclusion Dr. Grange remarked:

Certainly I did not anticipate that my paper would excite so much interest, but I will say with reference to the final disposition of it, that I would prefer to re-write the paper. As I presented it this morning, it is a conglomeration of notes, as I have picked them up from time to time in a somewhat irregular way. When I would see anything, I would make a note of it. And I stuck this conglomeration of notes into my bag when leaving Lansing yesterday, and I presented them this morning in a somewhat disconnected way. If it is the wish of the meeting that I should write it up in a more concise and connected way, I should have great pleasure in doing so. The probability is that it would not appear in the *Journal* for another month.

After the transactions of some other special business relating to the legisla-

* Will be published in the REVIEW as soon as it is received.

tive measures and private business of the Associations, and votes of thanks to the authors of the papers read, and to the Chairman, the meeting adjourned to visit the stock farm "Claireview."

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The 23d regular meeting of the New Jersey Veterinary Medical Association was held in Saenger Hall, on Thursday, August 13th, 1891, at Newark, N. J. Meeting called at 12 o'clock (noon), by the President, R. R. Letts. Secretary called roll, and following members present: J. W. Hawk, Newark; W. B. E. Miller, Camden; J. C. Dustan, Morristown; S. Lockwood, Woodbridge; L. P. Hurley, Hopewell; B. F. King, Little Silver; J. Kehoe, Lyndhurst; W. H. Rowland, Newark; W. Runge, Newark; R. O. Hasbrouck, Passaic; M. M. Stage, Dover; J. Gerth, Jr., Newark; R. R. Letts, Hoboken; W. H. Cooper, Jersey City.

Minutes was read and approved.

President Letts made a short address.

Secretary's and Treasurer's reports read and accepted.

Applications for membership were: Dr. Hugh Exton, Washington; Dr. Eugene Britton, Long Branch City; Dr. E. W. Schuppan, Jersey City; Dr. F. Lippencott, Swedesboro.

Recess was taken for half hour. Recalled.

Dr. Miller made report for the Board of Censors, and recommended S. W. Schuppan, E. Britton, and H. Exton for membership.

Election. Schuppan, Britton, and Exton were elected members.

A number of letters were read from different veterinarians and veterinary associations.

Bills passed.

Dr. W. H. Hoskins, Secretary of the U. S. Veterinary Association, made an able address.

Discussion, followed by banquet.

Camden, place of next meeting.

W. W. Curry next essayist.

W. H. COOPER, *Secretary*.

WESTERN PENNSYLVANIA VETERINARY MEDICAL ASSOCIATION.

A number of graduate veterinarians of Pittsburg and vicinity met several times at the office of Dr. J. C. McNeil, No. 26 Fourth Street, and finally, on July 24th, organized the above named association, and elected the following named officers to serve for one year, *viz*: President, E. I. Carter, V.S.; Vice-President, H. F. Doris, D.V.S.; Secretary, James A. Waugh, V.S.; Treasurer, James C. McNeil, V.M.D.; Directors, H. S. Richards, V.S., Charles Falconer, V.S., and C. Z. Laberge, V.M.

Monthly meetings will be held regularly on the first Saturday of every month.

James A. Waugh has promised to read at the next meeting a paper entitled "Electrical Accidents to Domestic Animals."

JAMES A. WAUGH, V.S., *Secretary*.

NEW JERSEY STATE VETERINARY SOCIETY.

The annual meeting of the New Jersey State Veterinary Society was held in New Brunswick, Thursday, August 6th, 1891, in White Hall Hotel.

The meeting was called to order at 2:30 P.M. President E. L. Loblein occupying the chair.

On roll call the following members answered to their names: Drs. Jos. Hopkins, J. C. Corlies, I. N. Krowl, E. L. Loblein, W. H. Lowe, E. R. Mercer, L. K. Sattler, A. T. Sellers.

The minutes of the previous session were read and approved.

The address of the President followed.

The Board of Censors recommended the admission to membership of the following: Drs. E. R. Ogden, E. C. Batten, W. F. Harrison and T. H. Ripley. The report was received and the doctors named were duly elected to membership.

The following applications for membership were received and referred to the Board of Censors for action: Drs. E. Landes, Camden; W. Gray, Newton; E. D. Bachman, Phillipsburg; J. M. Whittpan, Jersey City; J. P. Lowe, Paterson; S. C. Tremaine, Bridgeton.

The election of officers resulted as follows: President, Dr. James Hopkins; Vice-President, Dr. W. H. Lowe; Treasurer, Dr. A. H. McIntosh; Secretary, Dr. A. T. Sellers; Board of Censors, Drs. E. R. Mercer, I. M. Krowl, E. R. Ogden, E. C. Batten, E. L. Loblein.

The newly elected President was then escorted to the chair, and made an address of interest to those present.

The following resolution was then adopted, which is intended to probe the supposed existence of contagious pleuro-pneumonia in and around Newark, where it is reported cattle are being condemned because of the disease, and afterward sold to the public for food.

Whereas, The alleged existence of pleuro-pneumonia among the cattle around Newark, N. J., and the action of the Bureau of Animal Industry in quarantining and destroying herds, has induced much hardship among the small owners of cows, and,

Whereas, Many complaints have been made to veterinarians by owners of cattle that no such disease exists in that vicinity; therefore be it

Resolved, That this Society shall appoint a committee of five to investigate the methods pursued by the Bureau of Animal Industry, and if deemed advisable call a special meeting to consider necessary action.

Drs. E. C. Batten, E. L. Loblein and L. R. Sattler were appointed essayists for the next meeting.

Drs. E. R. Mercer, W. H. Lowe and James Hopkins were appointed delegates to the next annual meeting of the United States Veterinary Medical Association.

The essayists for the meeting being unavoidably absent, several hours were consumed in discussing colic in its different forms and its treatment. Many interesting and valuable points were brought out, notably the eserine treatment for flatulent colic. Congestive colic, the newly recognized form, received lengthy at-

tention of the greatest value to those present. The absent members missed a good meeting.

At 6 o'clock P.M. the meeting adjourned to the banquet hall, where an elegant repast was served.

Paterson was selected as the next place of meeting.

A. T. SELLERS, *Secretary*.

WESTERN IOWA VETERINARY MEDICAL ASSOCIATION.

Pursuant to a scheme to organize a veterinary association in the western part of Iowa, Dr. S. H. Johnston, of Carroll, issued a call for a meeting of the graduated veterinarians of this part of the State to meet at that place on the 24th of June, 1891.

Notwithstanding that several had promised to attend, when the time appointed arrived, there was but two present, Drs. S. H. Johnston, of Carroll, and G. A. Johnson, of Odebolt.

Not wishing to let the matter drop, they drafted a constitution and by-laws, appointed the following officers; Pres. Johnston, Vice Pres. Gibson, Sec'y-Treasurer, Johnson, and set August 8th as a date for a second meeting, at which time the proceedings of the June meeting would be presented for adoption.

G. A. JOHNSON, *Acting Secretary*.

The second meeting of the Western Iowa Veterinary Medical Association was held at Carroll, Ia, August 8th, 1891.

Meeting called to order by acting Pres. Johnston.

After some slight changes in the constitution and by-laws, the proceedings of the June meeting were adopted.

Moved by Dr. Johnson, and seconded by Dr. Gibson, that the President procure a list of service fees from the Ontario Veterinary College, and one from the Iowa State Medical Association. Carried.

After some further routine business, Dr. G. A. Johnson read a paper on "Open-joints, and a New Remedy," which elicited a lively discussion; after which the meeting adjourned to meet again at the call of the Secretary.

This will be but a small association of a dozen or so of members, as that is about the number of graduated veterinarians in this section of the State. The following are the members at present; S. H. Johnston, of Carroll, President; J. I. Gibson, of Denison, Vice-President; G. A. Johnson, of Odebolt, Secretary-Treasurer; L. A. Thomas, of Atlantic; and S. Stewart, of Council Bluffs. There will probably be several more applicants at the next meeting.

G. A. JOHNSON, *Secretary*.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Pennsylvania State Veterinary Medical Association will be held at the County Medical Association rooms, Coal Exchange Building, cor. River and Market Sts., Wilkes Barre, Pa., Tuesday, September 8th, 1891, at 10 o'clock A. M.

Order of business in general and reports of the following committees; Committee on Legislation, Dr. W. H. Hoskins, Chairman; Committee on Intelligence and Education, Prof. R. S. Huidekoper, chairman; Committee on Sanitary Science and Police, Prof. W. L. Zuill, chairman.

Essays will be read by Dr. W. H. Hoskins, on "The Veterinarian as a Sanitarian;" Dr. S. E. Weber, on "Pleurisy and its Complications;" Dr. J. F. Butterfield, on "Results of Laryngitis."

ROBT. GLADFELTER, *Cor. Sec'y.*

CORRESPONDENCE.

FASCIOLA AMERICANA, (Hassall, July, 1891).

SYN.—Fasciola Carnosa. (Am. Vet. Rev., July, 1891.)

In reviewing the nomenclature of the distomidæ, I find that Rudolphi has already described a species from *dentex vulgaris* under the specific title of *Carnosum*. Consequently, according to the rules of nomenclature laid down by the International Zoological Congress, 1889, I have changed the name to *Fasciola Americana*.

ALBERT HASSALL, M.R.C.V.S., Baltimore, Md.

OBITUARY.

W. I. BROADDUS, V.S.

W. I. Broaddus, V.S., who died July 11, 1891, from drowning while in bathing, was a young veterinary surgeon, held in great esteem in the town of Connersville, Indiana, where he practiced his profession.

Dr. Broaddus was born in Connersville in 1865, received his education in the schools of that place, and later entered the State University of Indiana, where he took the usual course, including lectures on veterinary science. He graduated from there in the spring of 1888 and in the autumn of same year matriculated at the Ontario Veterinary College of Toronto.

At this institution he won several prizes and the medal for best examination in anatomy. He graduated in March, 1890, second in a class of two hundred.

He then returned to his native town and practiced his profession, being noted for his devotion to veterinary science and his pleasing address. Although he has only been in active practice a short time, his loss will be greatly felt by the citizens of Connersville.

Whereas, In the death of Dr. Broaddus it has pleased Almighty God to remove from our midst a worthy and esteemed friend ; and,

Whereas, The intimate relations and business intercourse with him have been most pleasant to the members of these Associations and the veterinary profession, it makes it befitting that we publicly record our appreciation of him ; therefore,

Resolved, That in the loss of Dr. Broaddus we lose a friend and valued member of our profession ; and,

Resolved, That with deep sympathy with the afflicted relatives and friends, we express our earnest hope that even so great a bereavement may be overruled for their highest good ; and,

Resolved, That a copy of these resolutions be sent to his relatives and also published in the veterinary journals.

WALTER SHAW, Dayton, Ohio.	} Committee.
S. BRENTON, Detroit, Mich.	
E. DELL, Ann Arbor, Mich.	

T. M. TYE, V.S.

The death of Dr. T. M. Tye, of Muncie, Indiana, has just been announced.

J. B. HILLOCK, V.S.

Dr. J. B. Hillock, of Lancaster, Ohio, died July 26th of blood poison, contracted in holding a post-mortem on an animal that died of pneumonia. He was a graduate of the Ontario Veterinary College, class of 1872.

PROFESSIONAL ITEMS.

DR. W. L. WILLIAMS, of Bloomington, Ill., has just been elected to the chair of Veterinary Science at Purdue University, Lafayette, Ind. This is a just recognition of a veterinarian who will in his new field reflect great credit on the profession, the school and himself, and those who have made so wise a selection are to be commended for their good judgment.

PITTSBURG, through the efforts of Dr. Jas. A. Waugh, one of the most promising workers in the profession, has formed a local veterinary society that promises much for the welfare of the profession in Western Pennsylvania. The selection of officers guarantees faithful work. This new-comer adds another link to the chain of veterinary science now fast girdling our entire country.

DR. SAMUEL STEWART, resident State Secretary for Iowa of the U. S. Veterinary Medical Association, has accepted an appointment in the Bureau of Animal Industry.

DR. V. ATKINSON, of Milwaukee, Wis., is reported dangerously ill.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.
--This is obtainable, at any time, by a member of any State or local medical society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the Association is not necessary in order to obtain membership. On receipt of the above amount the weekly Journal of the Association will be forwarded regularly.

VETERINARY COLLEGES.

With the approach of the fall season, the new announcements of the veterinary colleges are coming out. We have received those of the American, Chicago, Montreal and Toronto veterinary colleges.

NOTICE.

WANTED.—A copy of the REVIEW for February, 1891—number 11, of the 14th volume. A good price will be paid for it. Send to the Editor.

WANTED.

A middle aged, qualified Veterinary Surgeon (M.D., V.S., preferred) who has had an extensive experience, also an established reputation, good character and thorough business ability, with means to take an interest in a large practice.

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CLAUDE D. MORRIS,

Bath, Steuben County, N. Y.

AMERICAN VETERINARY REVIEW,

OCTOBER, 1891.

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—The twenty-eighth annual meeting of the United States Veterinary Medical Association is over, and its work, its successes and failures, is a matter of history. As with many similar meetings, there is much to commend, and not a little deserving of unfavorable criticism. In point of punctuality in meeting and prompt dispatch of business, it probably excelled all previous meetings; and it can happily be said that everything, and nearly everybody, was on time.

The Comitia Minora, upon the call of the President, convened on the evening of September 14th, with but two absentees, and transacted almost all the business to come before it, so that when the appointed hour for the regular session of this committee arrived, there was but little left for it to do; its work had been leisurely and carefully done, and when the appointed hour for the convening of the annual meeting arrived, the officers were in their places, and the Comita Minora ready to report.

It is to be sincerely hoped that such promptness in the meetings and dispatch of business by the Comitia, will hereafter recur annually, and relieve the Association from the tedious waiting experienced last year at Chicago, and probably at most of the past meetings.

Aside from the ordinary routine of business, several matters of importance were considered and acted upon, or foundation laid for action by the Comitia Minora. First they

recommended that the proposition to elect to honorary membership Dr. Theobald A. Smith, B.A., M.D., Washington, D. C., and Dr. James Law, F.R.C.V.S., of Cornell University, be rejected. This report occasioned considerable surprise in the open meeting, and the reasons for such action on the part of the Comitia Minora were promptly demanded, and were as promptly given. No one discredited the high professional or social standing of either gentleman, no one thought them unworthy of honorary membership; but it was held by the Comitia, that so long as a man's education, location, age, and other environments rendered him freely available for active membership, it would be to the mutual benefit of Association and individual, and in every way proper, that he should enter into *active* membership, and reserve honorary membership for those veterinarians or other allied scientists of distinction, whose environments render them ineligible for election to active membership, or if eligible, are yet so situated as to make active participation impracticable.

This view of the Comitia Minora met the approbation of the open meeting. This action announces a new ruling, and establishes a new precedent in the Association, which is important. One thing in connection with this action was quite regrettable; the name of one, if not both the gentlemen, was inadvertently proposed at the meeting of 1890, without the knowledge or desire of the intended recipient of the honor, thus making it possible for the gentlemen whose names were proposed, or their friends, to feel that this unexpected action was taken on personal grounds. This, however, is far from being true, as in the open meeting no word was uttered by any member devoid of the greatest respect for both gentlemen, and there is doubtless no violation of desired secrecy when it is asserted, that every word uttered in relation to this matter in the Comitia Minora was equally respectful.

Should this ruling become an established precedent, it will exert a far-reaching influence on the *personnel* of the honorary membership, and restrict it chiefly to foreigners. In this relation, it might be well to note that it will probably be found advisable in the near future to provide honorary

membership or some equivalent for superannuated members. Many of the pioneer veterinarians of America, a number of whom were present at the birth of our Association, are now showing marked effects of age, and are not readily able to attend our meetings, and assume responsibilities in its labor. It would be a well deserved mark of esteem and source of gratification to these venerable men, and a credit to the Association they assisted to create, to confer upon them something akin to honorary membership, releasing them from responsibilities and duties, yet leaving them heartily free to enjoy any pleasures they might realize by attending our meetings and commingling with its members.

The Comitia Minora departed considerably from its traditions in the scrutiny exercised in recommending applicants for membership, with the result that more applicants were rejected probably than at any other meeting in the history of the Association—a procedure not likely to injure the Association.

The new application blank formally adopted at this meeting makes it incumbent for all applicants to make application in regular form over their own signatures, thus relieving the Association and members of the profession from the annoying and disagreeable process of electing to membership veterinarians whose names have been casually proposed by a member, without the knowledge or consent of the candidate, and later of being compelled to ignominiously “drop” the name of such unconscious members for non-payment of dues. More important, however, is the growing care with which the general character of intending members is examined, with regard to fitness and earnestness as members, and a very decided tendency to place the responsibility for the character of applicants upon the State or local Veterinary Associations.

So well marked is this tendency that it is generally understood that the Comitia Minora recommended the rejection of one candidate upon the sole ground of having for some time been a pseudo-member of a State Veterinary Association, in the work of which, although repeatedly importuned, he had refused or neglected to take any active part. Conse-

quently the Comitia held that if he would not work in his State Association, he would not be likely to prove an earnest laborer in the national body. It seems not improbable that in the near future an applicant for membership will need be an active worker in good standing in some local or state Veterinary Association (in localities where such are available) before he can hope to become a member of the U. S. V. M. A.

Such a course warmly commends itself to those who have the best interests of the profession and our Association at heart. Any veterinarian who cannot or will not do effective work in the local Association will generally prove of minor value to the national organization. In some cases there may be local difficulties, but these generally yield to an earnest desire to benefit the profession.

Probably the most important and far-reaching proposition ever placed before the U. S. V. M. A. was originated in the Comitia Minora by an informal discussion upon the desirable requirements for admission to membership, and took definite form in the open meeting, and we believe represented the unanimous wishes of the Comitia, in a motion by Dr. R. McLean to the effect that hereafter all applicants for membership, except those now graduated or matriculated, must be graduates from colleges requiring not less than three annual sessions of no less than six months each, exclusively devoted to the study of veterinary science, and that said colleges shall have a corp of not less than four distinctively veterinary instructors. We find here some of the chief reforms embodied which have been long urged in Association meetings, in the veterinary press and in other ways by many of the best friends of the profession. A special college committee has been in existence in this Association for some years, has written some and talked much. The committee is now left practically without a field for work, and has consequently been discharged. The day for "talk" has well nigh expired, and a distinct, clear cut, hard proposition is before us for action, and no opportunity for retreat has been reserved.

The battle *must* be fought, it *should* be won. It will be a

hard-fought battle, and the whole field should be well studied in advance and no hasty action taken, and all parties to the conflict should be prepared to gracefully submit in the end to the will of the majority. The solution of this question is of grave import, and involves questions intimately connected with the welfare of our society, profession and veterinary colleges, and we need to study the question in relation to all these in all their bearings.

To fully comprehend the possible effect of such restrictions upon the Association one must become fully conversant with its history from birth, and learn therefrom from what class of colleges it has heretofore drawn its chief support, who were the leading workers, essayists and discussants. If in the past these have been drawn mainly in proportion to numbers from the alumni of three-year colleges, it will be reasonably safe to conclude that the proposed restriction would, for the most part, reduce numbers without materially reducing the strength of the body as a whole.

A careful study of Dr. Huidekoper's address before the twenty-sixth annual meeting of the Society will shed much light upon this phase of the question, while the last two meetings, the most important so far held, are fresh in the memories of all. The men who do earnest and effective organizing work, present learned and valuable papers and reports, and lead in the discussion of scientific subjects, are the support of the Association, and the colleges from which they emanate constitute our "base of supplies" which we should in no wise cut off.

It is a notable fact that even in our largest meetings, when subjects come up for discussion from a purely scientific standpoint, the debate is generally confined to five or six members, and a recollection of who they are, proportionately, should indicate the possible result of the proposed amendment in our future discussions, which are, or should be, the most valuable part of our meetings. We should also count the possibility of schism or desertion, and carefully weigh its probable effect. We now have, in many respects, a very estimable Association, and we can ill afford to wreck it. Will

veterinarians who are now active, useful members, withdraw from the Association and injure it in every practicable way in case the proposed amendment prevails? If there be any such, their number and influence should be carefully estimated.

The influence of such a rule as that proposed upon our profession is a question of deep concern, which should in no event be passed over lightly. If it will redound to our good as a profession, this certainly constitutes our strongest argument in favor of the rule. If, by excluding from our Association certain classes we are to better our profession as a whole, we must understand the reasons for such belief. Could we, as an Association, benefit our profession more by excluding two-year men from our ranks? Would we, by this rule, induce more of the better classes to take three-year courses of study? Would the rule increase or decrease the average attendance at Veterinary Association meetings; would it increase or decrease the number and quality of our papers and reports at meetings; would it increase or decrease our volume and quality of current and standard veterinary literature? We should hold definite ideas also as to the duties of our Association toward the veterinary profession, and should determine whether aspirants for membership should be viewed from the standpoint of usefulness of the applicant to the Association, or *vice versa*. Shall we say that an applicant must be capable at the time of teaching members of the Association, or shall we only ask that he is capable of learning? The latter is the more philanthropic view, and probably the correct one. If it be correct, the question then arises what amount of special veterinary education is necessary before the member or applicant is capable of fully grasping the meaning, the truth of scientific papers and discussions? Our Association is, or should be, wholly above and beyond colleges, and should be prepared to take up and urge forward to higher development every earnest veterinarian capable of progress, provided that he is competent to enter advantageously into the work at a proper lower limit. Where is, or should be, that limit? If the average veterinarian from a college requiring but two sessions of four and a half to six

months each, is capable of comprehending scientific papers and discussions, have we any just right to bar him?

Although when we leave the college and enter the Association we do, or should, dissolve all allegiance with our *alma mater* in this respect, we should still remember the veterinary college as an essential factor in the growth and maintenance of our profession, and before changing our rules we should weigh its possible effects upon these. Will the rule aid worthy, sincere colleges?

The special college committee placed before the Association last year written assurances from the heads of all two-year veterinary colleges, save one, of their willingness and desire to bring their curricula up to the standard proposed in the rule. Will the new rule assist them in attaining this advancement? Should the rule pass at our next meeting, will its announcement lead intending veterinary students to seek colleges whose diplomas will be recognized by the U. S. V. M. A? Will these two-year colleges which have so heartily expressed their desire for advance of curriculum proceed to advance with the support of the U. S. V. M. A., regardless of one or two unwilling colleges? Veterinary education has now reached such a stage, and veterinary colleges are multiplying so rapidly, that it is useless longer to present the plea that "we will advance our course to three years as soon as other two-year colleges will do the same." A shorter and more explicit statement would be "*we will not lengthen our curriculum.*" The question is now placed fairly before the colleges and they *must* answer. We hope for the information of those who must vote on this question next September, that the answer will be made soon.

Other questions of importance must necessarily enter into the discussion. Should pupilage under a practitioner be accepted in lieu of a certain amount of college work?

How shall we interpret "three sessions of not less than six months each, devoted exclusively to veterinary science?" Suppose we have three years of nine months each, with four-fifths of the time devoted exclusively to veterinary science, the other one-fifth to other sciences or studies which tend to complete and round out the mental man?

Here we have more veterinary study than required, but along with it comes other studies which rarely injure the educated veterinarian. How about matriculation examinations? Several of our two-year colleges graduate men who are not able to read or write the English language, and are total strangers to other tongues. Are they suitable for membership?

The rule proposes that the veterinary college shall have on its active teaching staff not less than four veterinarians.

Can we not have *one very good* veterinarian who would equal *four* of those who have graduated without being able to read or write.

And then who is a veterinarian? We would exclude the illiterate graduate with the title of V. S. and substitute the learned M. D., or possibly other scientist. Many veterinarians will say that the noblest thoughts, the grandest truths and the most powerful inspirations to study and research, the impulses which have done most to make them *men*, were received not from the V. S., but from a prominent M. D. in the capacity of professor of physiology, pathology, histology, etc. If they understand animal anatomy and physiology (and all genuine physiologists do), they are veterinarians in the highest sense of the word no less than in accord with the etymological derivation of the term "veterinarian."

Will these rank as regularly educated veterinarians under the new rule? Let us be careful; if anything is wanting, let it be inserted; if anything is indefinite, let it be made clear; and if the new rule passes, let it be so framed that misinterpretation will be impossible.

The question is before us and must be met. Let us fully and carefully consider it, and above all let every member feel it his duty to come prepared next September to express his opinion and cast his vote.

The columns of the REVIEW will be freely open for the discussion of the question, and we trust they will be promptly used.

W. L. W.

ORIGINAL ARTICLES.

THE VETERINARIAN AS A SANITARIAN.

BY W. H. HOSKINS, D.V.S. Philadelphia, Pa.

(A Paper read before the Pennsylvania Veterinary Medical Association).

Standing to-day on the threshold of the most remarkable era in the history of the science of medicine, the veterinarian holds an anomalous position among the various lateral branches that go to make up the compact known as the science of medicine. The rejected stone of the builder has become at once the keystone of the arch. The once lowly and despised place of veterinary medicine in the column of science has leaped forward with startling power, to shine at the head, while bending around it, fall in lesser significance the feebler lights of our sister branches, glowing only in their refulgence to add luster and brightness to the main shaft, whose stupendous importance now leads us to bow our heads in deep meditation, as we gradually realize the weight of responsibility now resting upon our shoulders; we seem to be in a maze at the very edge of the momentous cloud, that soon threatens to envelop us in its depths of darkness, and from which we must grope our way by slowly but portentous tread, that upon the world may be shed the munificent benefits of health and strength, of relief from suffering, of freedom from bondage, whose heavy ties and demands have enfeebled and destroyed the power, in great measure, of the entire civilized and uncivilized nations of the earth. Our humble part in the world's work, our responsibility in the limited individual sphere of our daily duties, is freighted with the gravest responsibility as sanitarians, that must make the conscientious and earnest worker tremble at the significance and import of the work he has to do, of the part he must contribute to the solving of weighty problems, upon which, to a large degree, rests the progress of the entire world. The little, seemingly insignificant, coincidences of the past,

in the broader light of the to-day, are weaving a web of knowledge, a chain of evidence fraught with importance toward unraveling the mysteries operating in the causation and perpetuation of disease, that makes strong the hope that we are stepping upon a plane of action that will materially add to the prolongation of life, and give greater immunity from the pain and suffering of disease. The recorded coincidences of a multiple of cases of some one disease, perhaps of a hitherto obscure nature, as to the causes operating in its production, have contributed such significant evidence that experimental researches have made conclusive the deductions therefrom, and the number of cases of tetanus occurring in the future must be lessened to a marked degree.

The operation of castration in the lower animals; where a non-aseptic instrument, or an improperly prepared series of instruments, have resulted in a large percentage of deaths, usually attributed to some local cause, as of tetanus; the outcome of a dirty knife or ecraseur, from which the germs of tetanus have been carried from animal to animal, and the lack of proper antiseptics caused the loss of many lives, that should have been saved and perpetuated, to add to man's pleasure and enjoyment of life. The simple scratch upon the hand, insignificant as it may seem, has already cost the lives of many of our members, through the opening it offered for the entrance of the bacillus tetanus, from the patient it so often falls to our lot to treat.

The statement made so recently by so eminent an investigator as Thomassein that tetanus was of equine origin, and that he had produced a series of cases experimentally from actions of the medulla oblongata of the horse, startles us with its importance, and the long contended fact that the stable and manure pit especially were a favorable habitat and field of development for the germs, calls us to a field of responsibilities as veterinarians, that can no longer be ignored, and demands from each of us some part in the work to be done, to make conclusive these deductions, that we may find for them a remedy and safeguard, or to prove beyond any question their incorrectness.

That ever deceptive and cruel tormentor of so many precious lives, fickle and disappointing in all its promises, to which the entire world, from time immemorial, has rendered up its share to satisfy in vain its ravaging demands, popularly known as consumption, is to-day of such importance to us as veterinary sanitarians, that I might dwell wholly upon this one topic, to sufficiently warrant you, Mr. President, in assigning to me this subject for consideration.

Tuberculosis in all its allied forms and power, fully destructive character, baffling in treatment, and eradicating the lucid minds and brains of all ages, gathering only greater power and scope in its limits as time went on, until we had learned to tolerate its existence as a necessary evil, and to abandon all hope of remedying its inroads as hundreds by hundreds, thousands by thousands fell annually by the waysides, victims to its death grasp.

The humble victim as he passed us by, received only at our hands the commonplace pity of poor fellow, and the journals and news gatherers seemed only ready to chronicle his death, and summarize from year to year the awful numbers added to the countless thousands gone before.

A few short months ago the world was startled by the announcement of the claims of Prof. Koch, who many months before had discovered the tubercular bacilli, and following up his investigations, at last seemed prepared to claim the power to cure this fateful malady, and the world paused to bow, in humble attitude, before this great investigator; all eager to do him honor, and render up thanksgiving and prayer for this boon that promised so well; from every nook and corner of the earth all eyes were turned towards Germany, and from every center of medical learning the rapid tramp of footsteps could be heard as the last preparations were being completed to journey toward this wonderful Mecca, to learn of its means of use, its power of restoration, and witness its wonderful and miraculous achievements. But all this seemed short lived, and the weary tread of disappointed footsteps came slowly back upon our ears, and for the present we have yielded up the high hopes we had

entertained, and scan, with almost sarcastic credulity, the almost weekly announcements from all over the world, of curative injecting agents, that are sure to master the insinuating malady. The sound of the mason's trowel and the noise of the carpenter's hammer still rings in our ears, as the buildings, homes and hospitals go on, for the cure and care of consumptives.

The battle of words and the conflict of opinions among the learned minds of the scientific world continue, but from this new epoch we have much to learn, much to consider. While the cure of suffering, the relief of the dying is work of a noble character, we should not let it obscure the greater and more momentous question, of cause and origin of this dreadful curse to humanity. Let us remember with fitting importance its existence, perpetuation and increase among the animals over which we exercise care and guidance; not forgetting that the existence of tuberculosis has followed the introduction of milch cows in every nation and land where they have entered, refreshing our minds with the unchallenged statistics that the increase of death-rate and number of cases have multiplied in direct ratio to the increased number of cattle. The greater dependence of new countries on the food furnished in the shape of meat and milk has also with unerring certainty multiplied the number of tubercular cases. Milk and meat, forming a greater part of our existence from infancy to old age, is in complete accord with the records that remind us of its destroying influences at every stage of life. Tuberculus meningitis in the new-born babe and advanced phthisis in those of mature years, with all the other different forms it assumes in every grade and condition of life, seems fittingly in line with the knowledge that it exists in every type and breed of cattle, and oftentimes finds its easiest prey in those kept specially for the milk supply, because of its seemingly greater richness. The well fed as well as the forager for its existence offers fallow ground for its development, and the palatial walls of the millionaire, as well as the lowly cottage, where the family cow is the chief means of existence, all add their testimony to the close relations the

milk and meat supply occupy in the annals of tuberculosis. Hundreds of recorded coincidences of the past in the light of to-day add powerful and almost conclusive testimony to the origin of tuberculosis, and it commands us as veterinarians to be foremost in the sanitary field to awaken our people to the importance of more care and watchfulness of this hitherto neglected source of danger.

The fearful and loathsome sight that so often has made our blood tingle throughout our body and our face flush with feverish excitement, lest we should be among its victims, as we beheld the pitiable brute covered with running ulcers of farcy or detected in the uplifted head and dilated nostril the ragged ulcer of glanders, whose bacilli is claimed to-day stands at the head of the list as the most wonderful generator and prolific in cultivation, that were its opportunities sufficient would wipe out in a few years the entire equine race, and add more real misery to our existence that few of us would be here to-day, either eager or willing to participate in veterinary circles, or adopt it as a means of livelihood. The most exacting duty falls to our lot as sanitarians in limiting the existence of this disease; and the most imperative duty commands us in so thoroughly eradicating it wherever found that full security may be offered those of the equine race remaining as well as the protection of attendants and all users of public vehicles, waterings troughs, common hitching posts and sheds, that shall add to your value as citizens in every community where you reside.

The origin of rabies and its dread sequel in man of hydrophobia lies within your domain, fellow members, and the special need of your services in every village and town may prove of the utmost importance at any hour. It specially commands you in every household where you enter, to be as equally confident on one hand as to the correctness of your diagnosis of rabies, that every opportunity may be afforded to those who fear contamination, from a scratch or bite already received, to receive proper treatment, as on the other hand that the suspected symptoms exhibited by the family pet are positively not those of rabies, and to afford convinc-

ing reasons of the same. That no victims of lysophobia may ensue from a perverted nervous system, the result of fright or undue anxiety, your services may at times prove the most grateful boon to a community when your judgment is sought as to the so frequent misjudged mad dog and the well recognized fact of the frequency of newspaper outbreaks of hydrophobia and the frightful consequences wrought on already overstrained minds from fears entertained as to a simple scratch or bite received years before, will make your services of the greatest value in tendering a careful opinion so thoroughly guarded that all will fear to proclaim the subject, and your village or town will fall back into its wonted quietness, and the infrequency of the disease rabies and its fellow hydrophobia soon reach the place it should do in the common mind of our people. Remember, here are quite a large number of well-authenticated cases of lysophobia on record to-day, and while currently reported as hydrophobia, would almost all have yielded to preventive treatment had proper measures been resorted to at the time needed.

The feline existence of diphtheria and possibility of its being the origin of it in those of tender years of the human family, affords a field of research for all, and the necessity of you familiarizing yourselves with its appearance as described in the cat, becomes apparent to you at once. In large cities, where these animals come under our care and treatment for so many ills, I would advise the most zealous watchfulness on the part of the veterinarian that will shed light on this hidden question. The most accurate records should be maintained and added to the sum of knowledge already obtained that must soon answer this problem, and thus afford this means of control and immunity to our children from this fatal disease.

I can only briefly in this paper refer to your duties in aiding in preserving our nation from the losses entailed through the now imported disease of dourine or equine syphilis. The determination of what is best to be done with those affected members of the bovine species with actinomycosis, the necessity of their early recognition and the education of your client

of the wisdom of destroying them and ridding their flocks of all affected cases, the oftentimes commonly termed "lump jaw" sold to your neighboring butcher to be served up upon your own tables, may be the progenitors of some case of actinomykosis in your own family, and it behooves you to exercise the most energetic influence in your community for the proper recognition of your importance as a veterinarian and sanitarian, in awakening the minds of your people to the dangers thus lurking in their meat supply.

The need of watchful care as to trichinosis and measly pork is too well known to need any comment except to show the breadth and scope of our field of labor in the direction of sanitary work. The preventive measures for the extermination of the *tænia cercus cellulosæ*, *tænia mediocanellata*, will at no distant day be placed forcibly upon our shoulders. The prevention of our people and the commercial interests of the world are clamoring to-day for relief from the disastrous influences, physically and pecuniarily, that yearly follow in the train of existence of hog cholera and swine plague. The frequent origin of ringworm in the prattling babies about our feet, as they fondle the playful kitten, is not too insignificant to deserve your recognition.

Further down in the scale of life lie the unestimated losses of chicken cholera and many other contagious and infectious diseases, that partly decimate or wipe out entirely our flocks of fowls, whose value to the communities in which you reside are worthy of your patient efforts to limit. Aside from all this, fellow members, as if this was not more than we could sustain in our efforts as veterinary sanitarians, to-day upon your burdened shoulders the responsibility of familiarizing yourself with the dangerous power that the milk supply of our nation exercises in acting as the vehicle of transportation of such diseases as diphtheria, scarlet fever, typhoid fever and perhaps many other equally disastrous diseases that sap vitality, producing limitless suffering among those of every age, color and condition.

What are you doing in your community to awaken your fellow citizens to the importance of your work as sanitarians?

Are you aiding and supporting every effort of your brothers in the sister science to cover our broad land with a sanitary science and police system that shall bring untold benefits and relief to suffering humanity and the brute creation? Are you exercising the personal vigilance which is your first duty in self-preservation in protecting your streams from pollution of such kind and nature as in within your daily province?

The easy method for the lazy one to rid himself of some specimens of contagious and infectious disease through casting in the stream that runs by his door, or to bury just under the sod in some sandy soil along the course of a waterway, the reeking carcass, filled with myriads of germs to carry disaster and destruction to his innocent neighbors miles below. Have you forgotten the pest of hog cholera, that daily lessens the wealth and happiness of your neighbors in Jersey, for the use of the streams for the burial of the dead? Have you forgotten Plymouth in this fair valley, and its scourge of typhoid fever, from the little polluted mountain streams that trickled to the water supply of the town?

Are you unmindful of the severe and deeply felt losses incurred in Monroe county of your native State, from the pestilence of glanders that infected almost every public water fountain, every common hitching shed and post, and is still forcibly reminding us of the great need of a veterinary sanitary police for Pennsylvania.

Are you agitating in your community the necessity of a thorough inspection of your milk supply and specially its sources of production, the fountain head of its dangers, as well as the necessity of vigilance in the lesser dangers lurking in its part from commercial impurities?

The health and freedom from disease of the animals producing this life-giving fluid is of the first importance; the cleanliness and use of pure food in its production ranks next; following in their train the need of prompt measures to suppress its use, when the source of its production may furnish fitting opportunities for its acting as the vehicle of transmission of some other contagious malady.

At its place of consumption you are to ward against its

contamination, again from commercial impurities, the work of unscrupulous dealers and the addition of water and robbing of cream, the use of coloring matter, the addition of boracic and salicylic acids to maintain its sweetness may at once become of the utmost importance to the family physician dealing with some obscure disturbance of the digestive tract in the little babe, whose steps from infancy to old age are dogged by so many hidden and incipient dangers.

In cities of the first class the time is now ripe for the establishment of public abattoirs, where every piece of flesh intended for public consumption should be examined before admission for distribution, while in the process of preparation, and again macroscopically and microscopically before emerging from its walls to be placed upon the stalls as an article of food for consumption.

In the State a thorough sanitary police bureau, sustained by just and reasonable laws, through which the veterinarian may rise to the position he soon is destined to fill, if you are alive, fellow members, to the importance of your own position. A chief at the capital of our State, with a staff for the work as a whole, while at both ends of our commonwealth staffs for work of a more local character; these with trained aids at every chief railroad center and city, would be enabled to cover our entire State with a sanitary police system which would save thrice over the expense entailed in limiting the commercial losses, while the benefits accruing to the limitation of diseases and suffering would be inestimable. The future of medical science finds its strongest hope in sanitary work and the prevention of disease seems more likely to afford us better fruits than the limitless creation and production of medicaments.

Pleading with you, fellow members, for more aggressive work in agitation and individual efforts, commanding you as an Association to accept the role of leadership that falls so justly within your domain, I prophecy for you the grandest future, as far beyond your anticipation of to-day and your hope of to-morrow, as the distant scintillations of the glorious sunrise may be compared with the lowering clouds that so

suddenly part in vivid flashes of lightning and end in peals of distant thunder that portray the threatening storm that fills us with terror.

Thanking you for your patient indulgence, I submit this subject for your thoughtful consideration.

RESULTS OF LARYNGITIS OR PHARYNGITIS.

By J. F. BUTTERFIELD, D.V.M., Philadelphia, Pa.

(A Paper read before the Pennsylvania Veterinary Medical Association.)

It is rare that we have an inflammatory affection of the larynx without the pharynx showing more or less of the disease. The same of inflammation of the pharynx. The inflammatory action extends to and involves the larynx. They being in such close proximity in our patients, it is in many cases difficult to tell which is the original seat of the lesion, the pharynx or larynx. The results will differ, if the animal survives the acute stages, in proportion as the different parts are affected. What I wish to call attention to is perhaps due to pharyngeal inflammation, more than to the same disease in the larynx. Two peculiar and interesting cases have made their appearance in my practice; the more interesting because I have been unable to find any account of like cases in what few books or journals I have access to; neither have I talked with any practitioner that has observed these results. When we had the first case I did not think much of it, but when we had the second it seemed as though others must have observed the same following sore throat.

The first one I saw in May, 1885. The other in the spring of 1889.

The first one I did not see until two or three months after it was first sick. The other I saw at different times until it died. The symptoms, as I saw and learned them from their owners, were as follows: The owner of the first one came to my place about the middle of May, said he had an eight-year-old horse, that after being driven in a rain storm in winter had a severe trouble in the throat or head, that he dis-

charged great quantities of stuff from his nose ; he said it was difficult for him to swallow food, and water returned by the nostrils ; also that he was in good condition when first taken sick, but now was a mere skeleton and very weak. At the owner's request I went to see the horse. Found him at pasture eating grass, which seemed almost wholly to return by the nose, mixed with saliva. Offered him a pail of water ; he seemed thirsty, put his mouth to the water and drank for ten minutes, the water returning by the nostrils, except perhaps two quarts in the ten minutes.

He held his nose out a little, as a horse usually does with sore throat. There was no manifestation of pain in manipulation of the throat, nor was there any swelling visible. There was a peculiar hoarse, rasping cough, quite frequent especially when eating grass. (This peculiar cough I have failed to hear in the other case).

When the nose was flexed towards the breast it developed severe suffocation. I made examinations in many ways, such as probing nostrils, passing probang, &c., but could not decide upon anything. Had owner send him to my place, that I might the better watch his symptoms. After watching for two weeks I gave chloroform and explored the pharynx with my hand. By this means I discovered the exact cause of the symptoms manifested. I found the posterior-superior wall of the pharynx enlarged and folded or dropped down over the entrance to the œsophagus, and when the nose was flexed towards the breast the fold extended over the entrance to larynx, causing the suffocating symptoms. Not seeing how we could in any way effect a cure, I destroyed him by bleeding from carotid artery. An examination after death confirmed my diagnosis. The guttural pouches were clean and free from pus. There was no inflammation except a slight reddened appearance of the epiglottis, which I attributed to irritation caused by the cough. The other parts were normal. Had I not made the examination through the mouth it is quite possible I should have made the post-mortem without discovering what the lesion was.

The other case a mare fifteen years old. I saw her first

a few days after she was taken sick. At this time I diagnosed it simple sore throat, which I believed it was at the time, due to taking cold. The owner said the stable door blew open one night and left her in a draught of air. I prescribed external stimulants and electuaries. It was not until I saw her the third time, which was some four weeks after she was taken sick, that I decided it to be like the other case. She had a cough at first, deep and strong, but did not develop that peculiar, rasping cough until this time. Food and water returned by the nostrils, but not such marked irritation in breathing and never the suffocating symptoms. I prescribed iodide of potassium and tonics with varying results. At times there seemed some improvement. About three months later much worse symptoms developed, and it seemed quite probable the animal would starve to death. It died, starved to death, in about four weeks more. Autopsy the next day revealed only the same derangement as in the other case, with the exception the fold of the posterior-superior wall of the pharynx did not drop down as low, nor did it obstruct the entrance to the larynx. Only the entrance to the œsophagus was obstructed by the fold. These cases, I believe, are due to paralysis of the muscles of the pharynx, the results of a pharyngitis or laryngitis. The pterygoid muscle is perhaps the one most involved. In human medicine following serious cases of sore throat are observed, not unfrequently, paralysis of some of the parts, causing impediment in speech and inability to control fluids in swallowing, loss of voice, &c. There is a stallion in our town that has no voice, due if I mistake not to laryngitis when quite young. Roaring in many cases is pretty generally accredited to paralysis, and that the result of laryngitis.

ABSCESS OF THE GUTTURAL POUCHES.

By W. RIDGE, V.M.D., Trevese, Pa.

(Paper read before the Pennsylvania Veterinary Medical Association).

Bay mare, six years old, well bred, weighed about 925 pounds, served by Epaulet September 23d, 1890. Taken sick

August 3d with symptoms of pharyngitis. Another mare taken with similar symptoms recovered in two days. The symptoms were seen in severe chills; weather was warm, and it took two heavy blankets on her before she stopped shaking. I found after the chill head lowered, nose out straight, champing the jaws continually (which lasted at intervals throughout her sickness), seemed anxious to eat; would chew the food, then quid it; fluids when swallowed would be returned up through the nostrils, a gulping sound was produced when swallowing, then would cough; the cough was moist and with *repel* we had a slight foamy discharge from nostril; the temperature was 103° F., which gradually lowered to normal on the 10th, to rise to 103° on the 22d after a severe hemorrhage. Respirations were normal until the 25th, when they began to increase in frequency. On 16th we had a free discharge of a stringy, foetid mucous; the breath was very foetid after this until death. There were no swellings over the guttural pouches or any part; no dyspnoea at any time; vesicular murmur over both lungs; no points of dullness on percussion; on turning did not show any stiffness except head and neck; pulse was normal, full and strong, and not above 45 until after the hemorrhage, when it rose to 90. Mucous membrane were of rosy hue until after the hemorrhage, when they became pale. Bowels were normal, urine appeared normal.

My diagnosis was at first pharyngitis, later post pharyngeal abscess, and was at first treated by heart sedatives, with *pot. nit.* in drinking water followed in a few days by *hyd. bin. iod* blister to throat, and internal treatment by tonics—*dig.*, *ac sulph.*, *pot. sod.* and consultations. Dr. Raynor was called on the 14th. He found great tenderness over the third cervical vertebræ, which he thought was due to an injury. Then we blistered the neck and used hot packs. On the 16th she discharged about one pint of a stringy, foetid substance from the nostrils, as if it came from some cavity. After this we had a frothy discharge as before, except it now remained foetid. We now added *ferri sulph.* to our treatment. On the 17th Dr. Raynor again saw her, when he confirmed my

diagnosis of post pharyngeal abscess, with a good prognosis. Temperature now $100\frac{2}{5}^{\circ}$, pulse 42, respiration 14 and eating three pints of oats besides oatmeal, gruel and also grass and apples. But yet the head was held stiff as in poll evil, and if we attempted to move the head it gave her great pain. This condition lasted without change until the 21st, when in the night she commenced with a violent hemorrhage, bleeding fully six quarts. When I arrived it had nearly stopped, but was flowing from nostrils and mouth, the mouth champing. The discharge was without cough and did not discommode her, as she would offer to eat while bleeding. The blood was pure blood and without foam; gave her ext. ergot, when the hemorrhage stopped. In about one hour she commenced coughing and sneezing, when the hemorrhage again commenced. We administered morphia and canabis ind., followed by ext. ergot fl. 3iii every twenty minutes until she took 3iii, when we had no more hemorrhage. Next morning gave her whiskey, milk and eggs, also tr. bellad., cinchonæ sulp. and spt. mts. dulc. The next morning, 22d, Dr. Raynor again saw her, when he approved of my treatment. The temperature now rose to 103° , respiration remained 15, pulse 90, and weak but regular. The prognosis was now grave, as the mare refused to take any nourishment. On the 23d she began to take gruel, but had much difficulty in swallowing it. Temperature rose to 104° , respiration normal, pulse 84, weak. On the 24th Dr. Raynor again saw her. He thought it best to swab her throat out with a solution of ferri sulph., which was done. Temperature 103° , pulse 80, respiration 14. On the 25th temperature $102\frac{4}{5}^{\circ}$ in vagina, respiration 18, pulse 90; not eating; eye looks dull; countenance haggard; nose straight out; head in corner; legs cold; rectum patulous; examined lungs; did not feel sure as to their condition; also thought I had trouble in guttural pouch, and wanted to perform hyovertebrotony but wished advice. Sent for Dr. Zuill, who found a small patch of pneumonia in right lung, and did not think there was anything wrong with the guttural pouches, so did not approve of operation. Applied blister to right side of chest. The left lung seemed all

right. The prognosis was now grave, as mare had not enough strength to stand much of a pneumonia. On the 26th the temperature was $102\frac{1}{5}$ in vagina, respiration 29, pulse 95, weak but regular, eyes sunken, mucous membrane dry, legs cold, crepitant rales in middle and upper part of right lung, while we had mucous and blowing rales in the bottom. We now had crepitant rales in the left lung at the bottom. She stood in one place with the head in corner, breath with same foetor, but more so when disturbed.

On the evening of the 28th the animal died; autopsy was held at 10:30 A.M. next day. Temperature of weather 80° in shade. Animal lying on left side, emaciated, but not tympanitic. Animal evidently had not struggled; lying on peat moss; no discharge of fluids from any opening. Made incision along the linea alba from pubis to sub-maxillary space, skinned down the neck, then sawed off inferior maxillary bone anterior to molars, disarticulated, dissected down to guttural pouch. Parotid and sub-maxillary salivary glands normal. Opened right guttural pouch, which was perfectly healthy; then opened larynx, which had a few minute points of inflammation. On opening the pharynx found the mucous membrane inflamed and points of ulceration; the teeth were stained black, tongue normal. On opening the left guttural pouch we found it about half full of cheesy, foetid pus and decomposed blood clot, and extensive ulcerated condition of the mucous membrane. The hyoid bone was ulcerated until it was disarticulated at its upper extremity. The ulceration extended through the occipito-atloid articulation. The cartilage of the occipital and atlas highly inflamed and ulcerated. The ulcerations had extended into the spinal canal, the fluids pushing the meninges from the bone. The sinews were healthy.

The third cervical was perfectly healthy, as well as the muscles overlying it. Skinned down the side, taking off the front leg with the skin, cutting the ribs top and bottom, leaving lungs exposed. Cavity contained but very little fluid which was not foetid; the pleura inflamed over the spots of pneumonia bottom part of right lung; also anterior lobes

becoming gangrenous, with pneumonia extending to middle. On section showed points of breaking down, left lung hypostatic, congestion with a commencing pneumonia in the lower part, with anterior lobes breaking down, pericardium slightly inflamed, endocardium normal, chicken fat clot in heart and aorta, abdominal normal but pale, anæmic.

Dr. Ridge wanted to know what the Association thought caused the pneumonia, and how long could we have had the anterior lobes affected; also what was the primary trouble, whether due to injury, breaking the hyoid of pharyngitis, ulcerating up the Eustachian tube; whether the pneumonia could be caused by ergot constricting the blood vessels to such an extent as to produce gangrene, or whether due to entrance of blood, producing traumatic pneumonia.

Dr. Hoskins thought it was due to low, weakened condition of animal. Drs. Raynor and Hoskins thought it was originally an injury.

TETANUS.

BY CLAUDE D. MORRIS, V.S., Bath, N. Y.

(A Paper read before the New York State Veterinary Medical Association).

Tetanus is a constitutional traumatic infective disease, acting upon the central nervous system, primarily, and which is clinically characterized by spasm and rigidity of definite muscular groups, as a physiological result of the ptomaines of bacillus tetani.

Bacteriological studies and the classification of this disease as of an infectious character, is of recent date. In 1859 Betali related the case of a bull that died of tetanus after castration; several slaves ate of the flesh of the dead animal, and of these three were (in a few days) seized with tetanus, and two of them died. In 1870 Auger reported a case in which a horse has spontaneous tetanus, after which three puppies which had been in the stable were also affected.

Larger, in 1853, saw a woman who had a fall while cleaning a farm-yard, causing a slight wound of the elbow. Four

weeks later she was seized with tetanus, and on investigation, it was found that a horse affected with that disease had been in a stable opening into the yard where she fell. He also mentions another circumstance. In a small village, where tetanus was previously unknown, five cases appeared in eighteen months under quite different climatic conditions. Of these one had been taken to a hospital, after which two others in the same ward became affected with the disease.

The oxogenous origin of the disease has been proven by Nicolaier, who produced the disease by injecting into the tissue of animals bacillus taken from earth. Rosenbach found the same bacillus in the pus of a patient suffering from traumatic tetanus, and the identity of the bacillus of tetanus with Nicolaier's bacillus of earth tetanus was demonstrated by Koch in 1887.

The physical characters of bacillus tetanus, stained with fuchsin x 1,000, are those of an anærobic micro-organism, which presents more than ordinary life, with a spore at the extremity having the appearance of a broken drum-stick. Kitasato, in speaking of the bacillus as to its function of reproduction, says that the bacillus tetani produce spores in thirty hours in culture kept at a temperature of the body. They possess great resistance to heat, as they have been active after an exposure of one hour to 80° C. of moist heat, but they are destroyed by placing them in a sterilizer heated to 100° C. for five minutes.

The bacillus has been found in different kinds of surface-soil, and in street dust. In man it has been found, in tetanic patients, in the wound secretions, in the nerves leading from the seat of infection and in the spinal cord.

CULTIVATIONS, INOCULATION EXPERIMENTS, ETC.

It has been a question of dispute among pathologists as to the specific cause of the disease. The same question has been raised in connection with the pathogenic action of the bacillus tetani as with pus microbes, i. e., is the disease of which it is the specific cause due to the presence of the microbes or the ptomaines which it elaborates in the tissue?

It has therefore been demonstrated beyond doubt that the ptomaines of the bacillus of tetanus cause tetanic convulsions. However, symptoms in many respects analogous to that of tetanus, can be produced with strychnia when given in toxic doses. If this and other drugs belonging to the same group can act upon the spinal cord in such a manner as to cause spasms and muscular rigidity, we should therefore expect that if the microbes of tetanus produced ptomaines in the tissues these might produce the same effect on the cord, and that the symptoms are produced by them and not by the direct action of the microbe.

It is conceded by nearly all authorities that there are but few bacilli present in the blood of tetanic patients, and in many instances in which the disease was produced artificially the blood was after found sterile. On the other hand more microbes have been found at the seat of primary infection, and in the tissues between it and the spinal cord than in the blood itself. Perhaps stronger proof than any as yet brought forward, to show that the direct cause of the disease is the product of the microbes and not the microbes themselves, is the experiments made by Brieger, who has succeeded in isolating four toxic substances from mixed cultures of the tetanus bacillus in sterilized emulsion of meat.

The first, tetanin, when administered subcutaneously in mice, produced the characteristic symptoms of tetanus. The second, tetanotoxin, causes first tremors, followed by convulsions and paralysis. Third, the muriate of toxin produces well-marked symptoms of tetanus, besides exciting the lachrymal and salivary glands to increased functional activity. The last, spasmotoxin, also produces clonic and tonic spasms, which prostrate the animal at once.

As to the etiology of tetanus it has been clearly demonstrated beyond all doubt that the disease is due to microbic influences, whether ushered in as a traumatic idiopathic or artificially by infections of wound-secretions of tetanic patients, or by using mixed or pure cultures. The essential cause of the disease is the bacillus first discovered by Nicolaier in earth, and by Rosenbach in the wound-secretions of a tetanic patient.

The period of incubation seems to be extremely variable in both man and animal; in some cases existing only twenty-four hours, in others lasting weeks between the time of infection and the first manifestations of the disease. This may be accounted for. First, the number of bacilli introduced into the system may be so small that a longer time is necessary before the disease is manifest. Second, the character and location of a surgical operation in many instances acts as an infection atrium, also the anatomical characteristics of the tissues surrounding it may influence the time which is necessary to develop the disease.

The investigations of Brieger have shown that tetanic convulsions in animals are produced by injections of tetanin, one of the toxic ptomaines derived from cultures of the bacillus of tetanus. It is more than probable that the active symptoms of tetanus are due, not to the presence in the tissues of the bacillus, but to the toxic action of the ptomaines on the spinal cord; so that the duration of the period of incubation is further modified by the capacity of the infected tissues to yield to different ptomaines. As in the second instance the character of certain surgical operations play an important part as an infection-atrrium in the practice of veterinary surgery. My experience leads me to believe that operations and injuries in the soles of the feet, and as a signal to castration and the extirpation of the thyroid gland for bronchocele are operations in which the greatest tendency to this disease resides. Weiss reported thirteen cases of tetanus occurring after removal of the thyroid gland. In fifty-three total extirpations of the thyroid gland for goitre made by Billroth tetanus followed in twelve cases, while no cases occurred in one hundred and nine partial operations. Gautier has collected seventy-four cases of tetanus, thirty-six following abortion and thirty-eight following confinement. Autopsies were made in fifteen cases. Three presented on microscopical examination of the brain and cord no appreciable lesion; in one case a retained putrefied placenta was found in the uterus; in five suppurative metritis; in one, ovarian cyst; in one, hemorrhage into the lateral ventricles. Ten patients recovered, five after abortion, five after labor.

As to symptoms, diagnosis, and other details of the same, I consider it unnecessary to delineate before such a body as this, as all present are conversant with the symptoms of tetanus; there is only one thing, however, I would enjoin—that is, a too hasty diagnosis may result in a little embarrassment, as the writer has been twice deceived upon the first and a hasty diagnosis. In this case it was in a five-year-old mare used for road purposes; she had gone lame three or four days previous. The owner sent the stable boy to the drug store to procure a pound of flaxseed. He having other shopping to do, returned soon to the store and took what he supposed to be his package. On arriving at the stable he made the necessary preparations to putting the lame foot in a poultice. In so doing he offered the animal a handful of his flaxseed, which, he says, she seemed to eat with delight. The poultice was applied. At eleven o'clock I was called to see the animal. She at that time was standing in a box tied in opposite directions, right fore foot pointing in a neatly prepared poultice, head and tail extended, saliva and froth issuing from the lips, which were closed, ears erect and stiff, body rigid and in convulsions, and in a slight perspiration. Upon raising the head and slightly tapping the neck I noticed that the membrane nictitans did not move over the orbit, as is so constant in tetanus. Yet in the absence of that symptom I felt justified in my diagnosis. The only history I could get of the case is that already stated. Ordered poultice removed and parts washed, as I wished to examine the foot. At this point in the proceeding I was able to find the cause of these tetanic convulsions.

The poultice was made of *po. nux vomica* instead of ground flaxseed, and the quantity the animal had eaten was about \mathfrak{z} ij. In citing this case it is for the purpose of showing the physiological effect of this drug on the nervous centres and upon certain muscular groups. As in tetanus, we get like symptoms produced by the physiological effect of the bacillus, that is, the product of the bacillus, what they are capable of throwing off, and certain other peculiar substances (resembling alkaloids) which are produced during the process of putrefaction of the dead ones in the system.

Regarding the treatment of this disease, nearly every known element that acts as a nervous sedative has been used to a greater or less extent with varying degrees of results. Experience, however, leads me to believe that drugs play a minor part in the successful issue of the disease, and that no one drug can be relied upon as a panacea. That the disease must be treated according to the various stages of the disease at the time we first see it is, to my mind, a very essential feature. If seen in the early stages, when there is but partial rigidity of the voluntary muscles, and trismus is not perceptible, and deglutition is but little, if any impaired, a thorough purge at that stage is the sheet-anchor of success, followed with soda hyposulphite and carbolic acid, enjoining at the same time perfect quietude.

If the patient is not seen until all the symptoms are well established, the jaws more or less firmly set and occasionally convulsions, to offer a purge at that stage must be guarded discriminately. However, if it can be administered without exciting the animal, it is beneficial. I have had the best success under these circumstances by administering subcutaneously sulphate of eserine and dilute hydrocyanic acid, by allowing the animal to drink alternately the bromide of potash and hyposulphite; and if the disease is the result of an injury, thoroughly cleanse the wound and treat it antiseptically.

HYPODERMIC MEDICATION.

Translated by RICHARD MIDDLETON, A.B., D.V.S., Philadelphia, Pa.

These medicines, in proper form, are placed in the subcutaneous connective tissue by means of a syringe adapted to the purpose; from this point they enter the general circulation, and ultimately spend their force upon the organism.

This syringe is filled with a sterilized solution of the desired medicine at a temperature of about 86°F; the instrument is then inverted, and the needle placed in position upon its end. In order to exclude any air which may still be in the

same, the piston is forced inward until a drop of the fluid appears.

When there is no indication to the contrary, those locations which contain much cellular tissue are selected as points of injection ; for instance, the cervical and pectoral regions. Portions of the anatomy in which the connective tissue is attenuated should be avoided ; likewise those localities which offer prolific nervous development, or which present any pathological process. It is also evident that those points of the body should be chosen which cannot be bitten or readily rubbed by the patient.

The part selected is washed with corrosive sublimate solution 1-3000, and the skin of the same is grasped between the thumb and the first two fingers, and raised ; the needle is then introduced at the base of the fold so produced and the contents of the syringe discharged.

The part is afterward manipulated and compressed to facilitate diffusion.

Of the small number of substances which can be applied in this manner, the following are of the most interest to the practical and progressive veterinarian.

Æther. This is, per se, injected where a rapid stimulating agent is indicated, as in a sudden diminution of the vital forces (collapse). Cats and dogs take minims xv-xx per dose. In the large animals, in order to avoid large doses, it is used in connection with camphor (quod vide).

Amyl Nitris. English veterinarians have tried this substance in tetanus ; it is injected twice per day, commencing with gr. xv and increasing gradually to gr. xxxv.

Antipyrinum. Very soluble in water. Diminishes the temperature and relieves neuralgic pains. Especially valuable in fevers of a rheumatic nature ; a 20 per cent. solution is used subcutaneously. The expensiveness of this drug and the poisonous symptoms elicited by its continued use form two objections to prevent its universal adoption. For dogs the dose is regulated by the size of the animal, and ranges from gr. viii to xlv.

Apomorphinum Hydrochloricum. This applied in a 2-3 per

cent. watery solution. For dogs and young swine this is an excellent emetic. Dogs take gr. one-sixth, swine gr. one-sixth ii. It is particularly extolled by Feser and Lemke, who injected gr. ii-iii once a day in cattle afflicted with pica, and in sheep suffering from wool eating.

Atropinum Sulphuricum. Soluble in three parts of water, and so used. Given as an antidote in strychnine, pilocarpine and physostigmine poisoning; also in spasmodic states of the unstriated muscular fiber (in this connection happily combined with morph. hydro.) Pro dosi horses gr. i-ii; cattle gr. i; dogs gr. $\frac{1}{10}$ - $\frac{1}{2}$. (Doses are not absolute).

Camphora. An excellent neurotic stimulant; administered as spiritus camphoratus, oleum camphoratum, or, still better, as an ætherial solution 1-4. Horses and cattle take of the latter 3 ss-11, repeated if necessary.

Quinia. Quininæ hydrochloras may be used dissolved in glycerine 1-6, or alcohol 1-3. Quininæ sulphas is dissolved in glycerine, through heat, in the proportion 1-3. Sometimes the desired result is obtained after giving horses and cattle gr. i; and in dogs after giving gr. 1-11 of the quin. hydrochl.

Curare. The dose as well as the therapeutic value of this agent are questionable.

Morphinum Hydrochloricum. Morph. sulph. may also be prescribed. Both are soluble in equal parts of glycerine and water; by the aid of heat morph. hydrochl. dissolves in five parts glycerine. Morphine injections are indicated when cerebral excitability is to be decreased. The worth of morphia salts as local anæsthetics is attested by many practitioners. The dose for horses is not much over gr. viii, while large doses cause dangerous unquiet of the animal (first stage of the toxic effect). Cattle may be given the same dose; dogs require $\frac{1}{6}$ - $\frac{1}{2}$. The modern and only scientific method of treating colic involves a rectal examination with a view to ascertaining its cause and securing indications for its rational treatment. Morphine is a powerful agent which facilitates this, and under certain conditions it is the only remedy which makes it possible. Spasmodic colic ceases with the establishment of quietude, and here it is well united with atropin.

Pilocarpinum Hydrochloricum. Excites practically all glands to increased activity, wherefore it is endorsed as a diaphoretic, sialagogue, expectorant, diarrhœicum, etc. According to Ellenberger, perspiration in the horse follows doses of gr. vii-ix, and salivation is seen from gr. $\frac{2}{3}$ -i. Large doses induce pulmonary œdema! Moller advances this medicine as a stimulant to the rumen in tympanites. The dose for cattle is gr. ii-iii; for sheep, gr. $\frac{2}{3}$. Signol used pil. hydrochl. much in ascites of the horse; he introduced first gr. iii p, then gr. v, and finally gr. vi p. Klemm applied gr. xii in subacute cerebritis, and gr. xv-xviii in immobility; he covers the patients with blankets, which were gradually removed after twelve hours.

Hypodermic injections of gr. iii-vii once daily are strongly advocated in muscular rheumatism of horses; also in laminitis, gr. vii-xi. Such large doses must not be given without the antidote (atropin) at hand. We have tried the daily application of pil. hydrochl. for its expectorant effect, in doses of gr. $\frac{1}{3}$ -i, and can warmly recommend it.

Respecting purgation, it is advantageous, says Ellenberger, to administer physostigmine and pilocarpine together; the idea is to utilize the hydrogogue effect of the latter in aiding the peristaltic action of the former. Horses take gr. iss. of pil. hydroch., followed by gr. iss. of physostig. Instead of pilocarpine one may use muscarine in gr. $\frac{1}{3}$ - $\frac{2}{3}$ doses; the latter is, however, too expensive.

Pilocarpin-Eserin. Prepared by Maase in Gorlitz. We have frequently convinced ourselves, in the clinic, of the excellence of the compound as a purgative in colic cases. It is dissolved, or comes as a powder in small bottles which contain gr. vii., the proper dose for an adult horse.

Secale Cornutum. Ergota. Uterine contractions are induced by this drug. From its vaso motor action it may be serviceable in hemorrhages. Extractum secalis corunti dyalysatum is the proper preparation to use hypodermically. Mares and cows require 3 ss.-i; bitches, gr. $\frac{1}{3}$ -xv. Ergotinum Bonjean is also much used in aqueous solution.

Strychninum Sulphuricum. Exceedingly soluble in water,

especially after the addition of a small quantity of alcohol. Results can be expected from strychnine in the handling of a paralysis or a paresis which is not referable to pathological or mechanical causes. In any case, strychnine must not be brought into use until the inflammatory symptoms have disappeared; under the same rule this agent may be used with benefit in disordered sensibility (amaurosis). It is a powerful and reliable antidote to chloral hydrate poisoning. Horses and cattle take gr. $\frac{1}{2}$ -i. I have seen threatening symptoms follow a dose of gr. i. Ellenberger only succeeded in saving a horse that had received gr. $1\frac{3}{4}$, by injecting atropin. For sheep and goats the dose is gr. $\frac{1}{10}$ - $\frac{1}{2}$; for dogs, gr. $\frac{1}{64}$ - $\frac{1}{30}$. If toxic symptoms manifest themselves, do not delay atropin.

Thallinum Sulphuricum. Easily soluble in water, or water and glycerine. Introduction of the acid solution is quite painful. If an antipyretic effect is desired in a medium sized dog, the animal receives primarily gr. $\frac{1}{3}$ of morph. hydrochl., which is followed in ten minutes by gr. ix of thallin. sulph. The reduction occurs regularly, and lasts twelve to sixteen hours.

Veratrinum. Dissolved in alcohol, and then diluted with glycerine or water. Locally very irritating. Up to the present time almost exclusively used in rheumatism, and with good results. Cagny commends veratrin injections in pneumonia; in three cases where he prescribed this treatment, he saw the pyrexia diminish, and a rapid convalescence follow. He dissolved one part of veratrin in twenty-five parts of alcohol, and introduced 3 i-ii of the same. Cattle and horses take gr. $\frac{3}{4}$ -i; swine, gr. $\frac{1}{6}$ - $\frac{1}{2}$; dogs, gr. $\frac{1}{6}$.

Mertens reports the death of two horses after receiving gr. ii dissolved in one ounce each of alcohol and aqu. distill.; they expired under symptoms of clonic spasms and nausea. Veratrin is also accounted a good stimulant to the pausen in tympanites in gr. $1\frac{3}{4}$ -ii for an adult bovine. Since the introduction causes pain, precautionary measures must be taken (exercising, etc.).

REPORTS OF CASES.

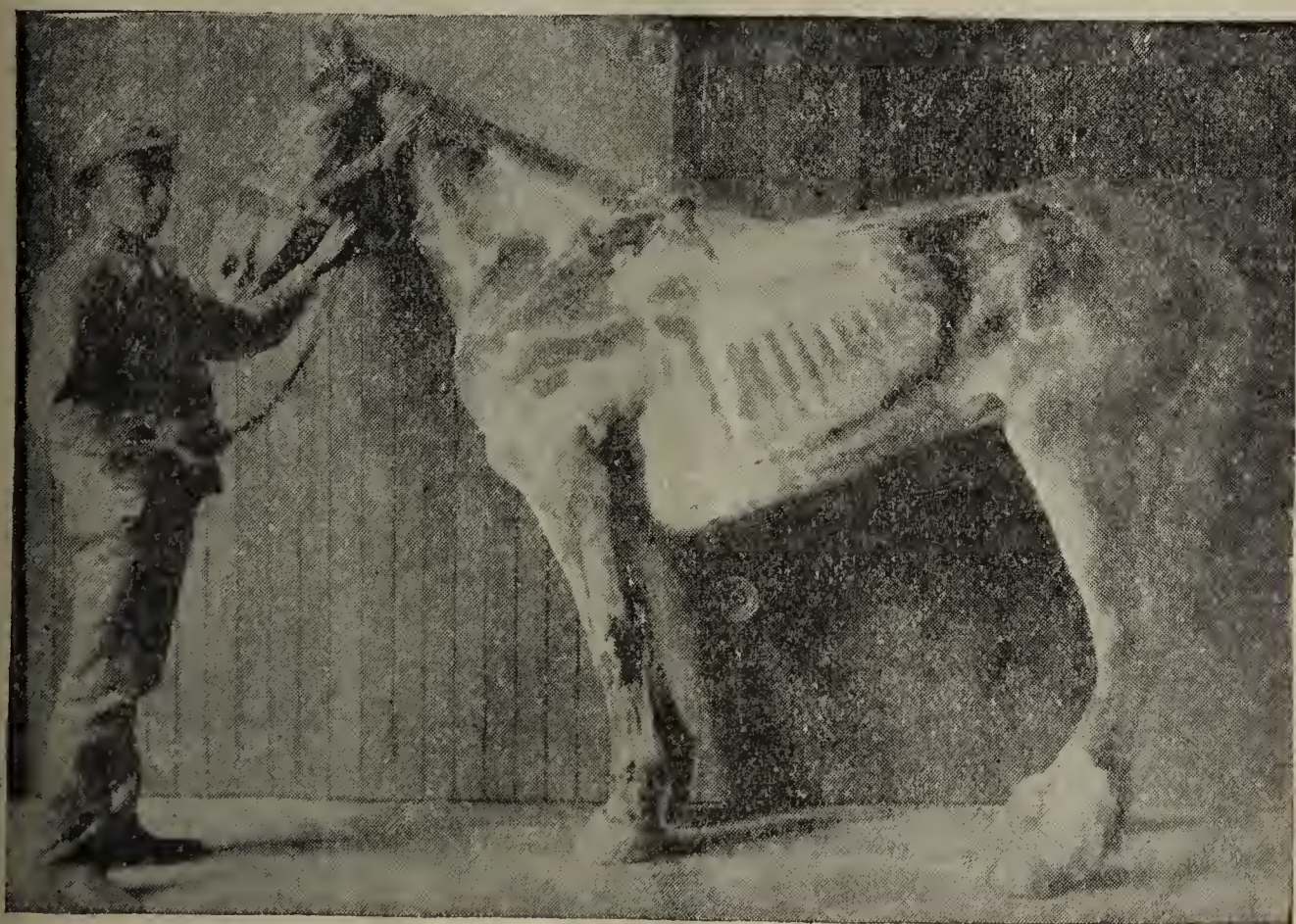
AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT.
RUPTURE OF THE SUPERIOR ATTACHMENT OF THE TWO CORAIS
RADIALIS MUSCLES—REMARKABLE POSITION ASSUMED AS A
RESULT.By E. NESBIT, D.V.S., House Surgeon.

Through the kindness of Prof. J. L. Robertson, we were presented with a bay gelding about fourteen years of age, accompanied by the following history: He had been owned by the Standard Oil Co., of this city, from the spring of 1888 till the time of his destruction, which occurred June 11, 1891. During this time he had never been known to be sick or lame. Had been used as a truck horse, having the same care as the other horses in the same stable. Some time during last January he was suddenly taken lame and stiff in both fore extremities, the apparent seat of which was in the shoulders, which were swollen, and when manipulated, pain was evinced.

A diagnosis of rheumatism was made and the ordinary mode of treatment adopted. The appetite remained good for four or five weeks and then gradually failed, and he never fully regained it, although he began to improve, so far as his rheumatism was concerned; so much so, in fact, that he was occasionally used to do light work, the lameness having subsided, and he seemed to be in good condition except his poor appetite.

On the morning of May 11th he was driven from his stable on Forty-sixth street, apparently in good condition, to Thirty-seventh street, a distance of about one-half of a mile, when he suddenly stopped and when urged to move was found unable to do so, having lost all control over his anterior extremities, although he remained standing. An ambulance conveyed him to the stable and here he was placed in slings. From that time he began to emaciate very rapidly. In health he weighed nearly 1400 lbs., and when destroyed 1100, showing a loss of from 250 to 300 lbs.

This great emaciation was not the only remarkable change that was going on in his economy, but one equally as interesting in the position he assumed while standing. This change rendered him a very pitiful subject and the accompanying wood cuts will serve to illustrate the change



better than I can describe it. The following description was just before his destruction: Animal very much emaciated; standing quite firm on legs; top of dorsal vertebræ measured fifteen hands and one-half of an inch from the ground; when bought he measured sixteen hands and one inch high, thus showing a decrease of four and one-half inches in height; scapulæ almost horizontal, thus nearly closing the scapulo-humeral angles; thoracic cavity sunken between fore extremities, so that the sternum is down to the lower half of the radius. From before, chest very hollow and sunken; anterior extremity of sternum retracted; both scapulo-humeral articulations very much swollen, but not painful to the touch; the pectoral muscles are enlarged and very prominent; great serratus atrophied, as were also the olecranon muscles. Temperature 100° F., pulse 90 and full, respiration about normal. When made to move does so quite easily with an occasional stumble. As all of us have a good general idea of the anatomy of the scapulo-humeral articulation, it will be unnecessary to say anything of its structure, so we will glance at the post-mortem and see how disease has changed the articulation to which we refer.

The animal was cast and life was stolen from him by the pithing operation. The skin was laid back and the anterior extremities were removed. The great serratus muscles were very pale in color and soft in structure, as well as greatly atrophied. The other muscles surrounding the articulation, except one which will be described later, were in normal position and structure. The ligaments binding the bones together were in position but were thickened, roughened, and of a dull, leaden hue. The synovial membrane was of the same color, but contained congested patches, showing the inflammatory process that had been going on; as a result of which thickening and roughening occurred.

The articular cartilages were also of the same color and roughened, thickened, and ulcerated in several places.

The neck of the scapula, instead of being smooth, as in health, was very much roughened by the ulcerative process, and by the exostoses thrown out. The coracoid process,

instead of being prominent, was but a roughened surface caused by extensive ulceration. The smooth articular head of the humerus was replaced by a very rough irregular eminence, the result of extensive ulceration. The bicipital groove in the same manner was roughened by numerous exostoses and ulcerations. Not only was this groove and head the only part of the humerus affected, but the whole superior extremity was covered by quite considerable bony deposits, results of the periostitis.

These are, indeed, all very interesting lesions, but those found in brachial biceps are equally, if not more so. They were torn from their superior attachment, at the coracoid process. They were swollen and of a normal color, but showed evidence of the laceration of some of the muscular fibres. Section showed that degeneration had taken place, by which many of the fibres had taken on a tendinous aspect. The ligamentous band that runs through this muscle was thickened and much discolored, and was not of its strong nature, but softer and more pliable. This change was noticed in this band from its inferior third to the superior extremity, which ought to have been fastened to the coracoid process.

The rupture of the superior extremity of this muscle from its place of insertion is the obvious cause for the position assumed by the animal. All the lesions found are evidences of an extensive acute arthritis. Both joints showed the same lesions, probably the near more extensively than the off side. Is this all a result of the rheumatism? Or will some one kindly offer some other explanation? One more word to show the importance of the brachial biceps muscle to the animal while he is standing. Not only is it a tensor of the antibrachial aponeurosis and a flexor of the forearm, but, through the medium of the inextensible ligamentous band which traverses its center, prevents the closing of the scapulo-humeral angle. So long as this angle is maintained, the animal assumes his normal position, but as soon as it is closed the positions assumed by our animal will be the result.

SOCIETY MEETINGS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The annual meeting convened at 10 A.M. Sept. 15th., in Willard's Hall, Willard Hotel, Washington, D.C., with about seventy-five veterinarians present, or less than one-half the number confidently expected. The attendance presented some peculiar aspects. In return for the trouble and expense incurred by the very respectably-sized body of eastern veterinarians who journeyed to Chicago last year, five western veterinarians appeared, one from Minnesota, one from Missouri, while Indiana furnished three. Iowa with one hundred, Illinois with one hundred and fifty, and Ohio, with probably more than one hundred and fifty within her borders were not represented. Have eastern and western veterinarians really become amalgamated? Do western veterinarians fail to comprehend the real value of a strong, representative national organization?

In extenuation it may be said, that western veterinarians are young men, just struggling for a footing in new territory; that there has recently been inordinate crowding, owing to the excessive output of our colleges, and added to this, most regions in the Mississippi Valley have been very healthy for two or three years past, and veterinarians have suffered in consequence. But western veterinarians were not the only absentees. The veterinary colleges were poorly represented, although we have a right to expect that these founts of learning should always be conspicuous in these meetings. One of the two-year colleges, conveniently located, was represented by two members of its faculty, another two-year college had no representative present until the afternoon of the last day, when one of the faculty arrived in time to make a brief speech in favor of questionable modes of advertising and to sit down to the banquet. The other veterinary colleges, a dozen or so in number, were not represented. Are our veterinary colleges opposed to the U. S. V. M. A.? Have our professors of veterinary science the good of their profession

at heart? Their reasons for not attending would be interesting.

We also have in the United States some twenty-five or thirty professors of veterinary science in agricultural schools, and veterinarians to the United States Agricultural Experiment Stations in connection therewith. They enjoy (with one exception) good salaries, have comparatively light work, with good opportunities for study and research, and are selected for their positions because of their superior educational qualifications. Their work is such that they can leave it, if so desired, and these representatives of the best element of our profession, were represented at the meeting by one (!) man, and he the youngest of the entire number, who had left a private practice but a few days before. Do the educational institutions, the States who employ these men at good salaries, respect the veterinary profession or care to have the veterinarians in their service do so? Out of a goodly number of State veterinarians we discovered two at the meeting. Is it useless for these public servants to attend these meetings, at each of which there are reports, papers and discussions relating directly to their duties?

The Bureau of Animal Industry was well represented, not alone by employes located in Washington, but by several from a distance. The most consoling fact in connection with the attendance was, that in spite of the absence of the "leading lights," the common, everyday practitioners went to work with a will, and held the *best* meeting in the history of the Association. This demonstrates that our profession has abundant resources in the ordinary private ranks, and can get up a good meeting whenever necessary.

President Huidekoper, in a few well chosen remarks; welcomed the members to the meeting, recounted the present rapid and healthy growth, and urged members to united efforts toward further advancement.

The report of the Comitia Minora was received; about thirty new members elected; several old members dropped from the rolls for non-payment of dues; and at the hour of 12:30 adjournment was had, in order to partake of an elegant

lunch prepared by the Washington and Baltimore veterinarians.

After lunch the Association listened to a very interesting report on Intelligence and Education, by the Chairman of the Committee, Dr. Peters, of Massachusetts, who gave a very instructive resumé of veterinary education in the United States, and then reviewed, at some length, the results of recent investigations in relation to diseases of animals, during the course of which he took occasion to criticise somewhat unfavorably some of the conclusions and methods of the United States Bureau of Animal Industry. The discussion of Dr. Peters' report was in no wise as extensive and animated as the production and subject merited.

The Chairman of the Committee on Diseases, Dr. Butler, of Mississippi, was absent, and his report, containing many points of interest, was read by the Secretary. The Special College Committee, through its Chairman, Dr. Lyford, of Minnesota, made the time-honored report that most of the colleges *avored* a three year college curriculum, but were prevented from attaining their desires through the shortcomings of some neighbor. As we have already indicated, the Association has now started to move in the matter as a body, hence the committee's report was accepted with thanks, and the committee discharged.

Dr. Miller, of New Jersey, presented an interesting report on Army Legislation, reporting failure of all efforts so far made to elevate the veterinary service in the United States Army.

The chief objections of past bills were presented in a clear manner, principal among which is the objection, by existing army veterinarians, to clauses in the proposed bill which they feel would jeopardize their positions and bear upon them unjustly. The Chairman recommended that the work be continued, and a new bill drafted in which an effort shall be made to meet the views of existing army veterinarians.

The Special Committee on Food Inspection reported through its Chairman, Dr. Williams, of Indiana, giving a brief resumé of national and international meat inspection, its use-

fulness in relation to human health and national economy, the difficulties to be encountered, and suggestions for meeting them. A classification was proposed for diseased meats which possesses some new features, and divides the entire category into four classes.

(a).—Meat affected with animal parasites.

(b).—Diseases not transmissible to man, but during the course of which ptomaines or chemical substances are produced which when ingested may produce toxic effects.

(c).—Diseases transmissible to man and which during their course develop ptomaines or other toxic substances.

(d).—Diseases transmissible to man, in which the sole danger exists in the living micro-organism.

This committee was appointed at the meeting of 1890, largely for the purpose of continuing the discussion on the paper of Prof. Schwartzkopff of Minnesota, on national and international meat inspection. The chairman took issue with Dr. Schwartzkopff in his assertions last year that actinomycosis is not a contagious disease, and reviewed at some length facts in support of his position. He commented upon the fact that thus far the supporters of the non-transmissibility of actinomycosis had confined their contributions to agricultural or stock papers, and had avoided the columns of scientific journals, and asked that Dr. Schwartzkopff and his colleagues should for once present their reasons for their belief before a scientific body, where the subject could be discussed upon a scientific basis.

Our ideal Secretary, Dr. Hoskins, of Pennsylvania, presented an admirable report upon the work which he has so energetically carried out in behalf of the Association.

Drs. Lowe, of New Jersey, and Grange, of Michigan, presented interesting reports as State Secretaries for their respective States.

The afternoon being far spent, only a few of the first reports were discussed, and they quite briefly.

The retiring officers were then re-elected by a practically unanimous vote, being a fitting tribute to their efforts in behalf of the Association during the past year. The result was

eminently satisfactory to all present, although it is quite probable that some absentees will unfavorably criticize the practice of re-electing the same officers for several terms. There are two remedies available to them. They can attend the meetings and cast their ballots according to their faith, or have the constitution changed so they can vote by proxy.

The morning of September 16, with the promise of interesting papers, drew out a somewhat better attendance than that of the previous day.

Dr. Lyford, of Minnesota, presented an excellent paper on "Barren Mares," a topic of great interest and value, which has been much neglected in veterinary literature. It was liberally illustrated and brought out a fair discussion. Dr. Bryden, of Massachusetts, followed with a paper on cattle transportation, which was full of interesting information, especially to those not directly acquainted with the subject.

In general he claimed that export cattle were badly handled, crowded in unsuitable cars, kept on board cars for an inhuman length of time, unloaded in muddy, unprotected, ill-arranged stock yards, and thus rendered unfit for trans-Atlantic shipment before being loaded on shipboard.

The essayist held that the Bureau of Animal Industry by its rules was forcing ship companies to undergo great expense and inconvenience in making changes in cattle-carrying vessels, which with these changes and expense rendered the transportation neither safer nor more humane, consequently he believed the recent regulations governing cattle-carrying vessels partook largely of persecution, and that the ocean steamers should be more leniently dealt with, while railroads and stock yards should receive more attention from the Bureau. His paper brought out a spirited discussion, participated in mainly by the essayist and the representatives of the Bureau of Animal Industry. The latter stoutly maintained that no such condition of affairs existed in their various districts, and mildly hinted that the abuses were possibly confined to the city of culture.

Dr. Williams, of Indiana, presented an illustrated paper on "Rachitis," the most noticeable point being that he held rachi-

tis and osteoporosis to be identical, a claim not heretofore made in English veterinary literature, although such Germans as Friedberger and Fröhner have taken this view, while Dick-erhoff dissents and agrees with most English veterinary writers. This position will doubtless be assailed promptly by those believing with the mass of English veterinarians.

Dr. Huidekoper, of New York, presented a good paper on "Identification of Animals," the publication of which will give us something entirely new in English veterinary literature, and will doubtless receive a critical study.

The discussion of the papers of Drs. Williams and Huidekoper, and the discussion on Dr. Liautard's paper, postponed from last year, were unavoidably postponed, owing to the lateness of the hour, until next year.

The papers, reports, discussions and transactions will appear promptly in print in a special publication in compliance with the wishes of the Association. So we need only counsel a careful study of them all. The papers, as a collection, are equal to those of any meeting in the history of the Association. They were damaged, however, by a want of time for discussion. We had either too many papers or too little time. It is becoming quite evident that the length of our meetings must again be increased by the addition of one or two more days, so that we can do our work well. The adjourned discussions and unfinished business left over from this meeting will crowd to its utmost one day of our next meeting. Reports of committees, etc., will claim another day, so what will we do about papers for the meeting of 1892? Three or four years ago one day was ample time for all business and papers. Surely we are presenting encouraging signs of growth and prosperity.

The banquet, which closed the twenty-eighth annual meeting of the Association, proved to be an event which can be remembered by those present only with pleasure, and brought to a climax the unceasing and careful work of the local Committee of Arrangements, which from beginning to end passed along smoothly and promptly, so that the vote of thanks tendered it at the close of the meeting was a fitting compliment to a work well done.

Sixty plates were placed at the banquet table, and sixty persons partook of the feast. The menu was excellent, the decorations beautiful.

On President Huidekoper's right sat the Hon. J. M. Rusk, Secretary of Agriculture, on his left Dr. Parsons, of the United States Bureau of Animal Industry, while occupying prominent places were ex-Congressman Warner, of Missouri, and Mr. Hills, of the Bureau of Printing. After having done full justice to the delicacies set before us, President Huidekoper, as toast master, after some carefully chosen words, which kept members generally in ignorance of whose name was to be coupled with the toast to "The President," called on Dr. Gadsden, who was surprised, but amid a mixture of blushes and good humor did ample justice to this loyal toast.

"Our Profession" was ably responded to by Prof. Robertson, of New York, who lavished unstinted praise upon the American veterinary profession and drew especial attention to the fact that American veterinarians, with their deficient education and short college courses, yet manage through inherent enterprise and adaptability to maintain a high rank alongside their colleagues from the long-course colleges of other countries.

"The Department of Agriculture" was responded to in a happy manner by Drs. Michener and Parsons, of the Bureau of Animal Industry.

The Hon. J. M. Rusk, Secretary of Agriculture, held the closest possible attention of all, and elicited frequent and hearty applause, while speaking of the mutual interests of agriculture and veterinary science, and of the inestimable and essential value of our profession to agriculturists when our national wealth is threatened by contagious and epizootic animal diseases.

Ex-Congressman Warner, of Missouri, kept the banqueters constantly shifting from laughter to applause while responding to "The United States Congress."

The "Press" was ably championed by Mr. Hills of Washington; "Our Colleges," by Dr. Lyford, of Minneapolis, and "The Society for Prevention of Cruelty to Animals," by Dr.

McLean, of Brooklyn. "Veterinary Associations" was the theme assigned to Dr. Williams, of Indiana, who briefly spoke of their duties to the profession, their usefulness to individual members and to the profession as a whole, and expressed the wish that they should grow in numbers, usefulness and thought.

Dr. Faville, of Baltimore, as one of "Our Hosts" assured the members of the great pleasure it had given them to do what lay in their power to render our stay in Washington pleasant and profitable. The venerable Dr. Michener, Sr., spoke of the early days of our Association, and Dr. Winchester, of Massachusetts, closed the list, who, as one of "Our Visitors," paid due compliment to the excellent arrangements and entertainment provided by the local Committee of Arrangements, after which the various members bid each other adieu until a year hence, and so was ended one of the most enjoyable and profitable meetings in the history of the United States Veterinary Medical Association. W.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The semi-annual meeting of the New York State Veterinary Medical Society was held in the parlors of the Grand Central Hotel, New York, on Wednesday August 12th, 1891. Owing to the delay of the members in reaching the city, the hour for calling the meeting to order was extended.

President Morris called the meeting to order at 10.10 A. M. A limited number of members responded to the roll-call, but several members came in later in the day. Letters and telegrams of regret were received from members of the Society, and the profession generally.

There were also present, W. Horace Hoskins, Secretary United States Veterinary Medical Association; Prof. A. Liautard of New York; Roscoe R. Bell, D.V.S., President, and Geo. H. Berns, D.V.S., ex-President of the Long Island Veterinary Society, and other prominent members of the profession from New York and Brooklyn.

President Morris delivered an address of a few well chosen

remarks, explaining why the place of meeting was changed. It was done to please the members of the profession in the eastern part of the State, and especially those of New York and Brooklyn, and to endeavor to get their valuable aid and assistance in promoting the matters pertaining to legislation, and the good of the Society, and to give those desiring to become members of the Society an opportunity to do so. Dr. Morris also said that he understood the impression had got abroad that this Society was simply one for the western and middle part of the State. Now, regarding this, he wanted it distinctly understood that such was not the case, that it was not an eastern nor a western society, but just as its name implied, a *New York State Society*, its purpose being to try and benefit every qualified veterinary surgeon in the State of New York, whether a resident of one of the large cities of New York or Brooklyn, or a remote village of the interior, and it being the intention to get all interested and to all work together for one grand cause, to elevate the profession to its proper standing so it will become better recognized by the local and national governments, and by the public at large.

The Secretary then read a synopsis of the minutes of the last meeting, which were approved by the Society.

In the absence of Professor Law, who came in later, President Morris made a report on what had been done pertaining to legislation.

President Morris said that there had been seventy-six votes cast for the bill when eighty-four votes would have passed it; showing that the labors of the committee had been effectual to a certain extent, and that we ought to keep pushing the matter. He also repeated that the object in going to New York was to get the assistance of the veterinary profession in getting the bill through the Legislature.

He said there was no reason why it could not be supported from a sense of merit, as it would oblige men who wish to enter the profession, after its passage, to do so through a college or university granting veterinary degrees.

President Morris then made a motion that a resolution of thanks be offered by the members of the Society to the Hon.

Rufus S. Peck for the service rendered in introducing the bill and supporting same when brought up for action. Prof. Jas. Law seconded the motion, which was carried unanimously.

Resolved, That it is the sense of the New York State Veterinary Medical Society that individually they owe a debt of gratitude, and appreciate the valuable service rendered by the Hon. Rufus S. Peck of Cortland, for his untiring energy and fidelity in behalf of the Veterinary Surgeons' bill, which he so ably fathered during the last session of the State Legislature.

And that we, the representative veterinary surgeons of the State of New York, feel under personal obligations to Mr. Peck, and that we deem it a privilege to express the same to him.

President Morris than said that if any member of the profession present wished to discuss the merits of the bill, they were at liberty to do so. Quite a discussion followed, regarding changes in certain clauses, which were amicably settled.

Prof. A. Liautard suggested that a meeting of all the qualified veterinarians in New York State be called for the purpose of making every one acquainted with the merits of the bill. He also suggested that seven members of the Board of Examiners be chosen from the members of the New York State Veterinary Medical Society, and that eight members of the Board of Examiners be chosen from members of the profession throughout the State who hold diplomas from some college or university granting veterinary degrees. This was made a motion by Prof. Law, and seconded by Dr. Jno. Wende, voted on and carried.

The discussion was then continued by Prof. Law, Prof. Liautard, R. R. Bell, D.V.S., G. H. Berns, D.V.S., and several other prominent members of the profession. At the close of the discussion all agreed that the bill was all that could be desired at present and that it would be approved by the profession at large, and that each and every legally graduated veterinary surgeon should use his personal influence and energy to secure the passage of the bill.

Adjournment was then taken for dinner.

President Morris called the meeting to order at 2.30. P.M.

The following applications for membership were received by the Censors and placed on file :

R. S. Huidekoper, M.D., V.S., New York City ; Geo. H. Berns, D.V.S., Brooklyn ; Roscoe R. Bell, D.V.S., Brooklyn ; H. McWhinnie, D.V.S., Troy ; L. E. Willyoung, D.V.S., Albion ; W. A. Conklin, D.V.S., New York City ; Wm. Machan, V.S., New York City ; G. B. Ackerman, D.V.S., New York City ; L. McLean, M.R.C.V.S., Brooklyn ; C. B. Comstock, D.V.S., New York City ; Wm. Somerville, V.S., Buffalo.

Prof. A. Liautard was made an honorary member by a unanimous vote.

A resolution of thanks was tendered the visiting members for the interest they had taken in the matters brought before the meeting and all were asked to become members of the Society.

President Morris then proceeded to read his paper on "Tetanus."*

A lively discussion followed the reading of the paper, of which the following is a synopsis.

Prof. Law said that at present there was no doubt as to the germ theory and stated his experience in several cases ; also said that some cases were known to have recovered without any treatment, while other cases with the best medical treatment succumbed to this fatal disease.

Prof. Liautard was also of the opinion that the disease was caused by the bacillus tetani and when possible large doses of purgatives might be administered, with antiseptic treatment to wound in traumatic cases, with of course strict quietude.

Prof. Law thought the early use of slings was of great benefit.

Dr. Geo. H. Berns stated his experience in citing seventeen cases he had at one time, which he treated with large doses of purgatives, and one-ounce doses of tartar emetic in the drinking water three times daily for about a week ; then alternated it with one-ounce doses of powd. lobelia, and of course other

*Published in this issue of the REVIEW.

antiseptic treatment of the wounds, quietude and slings. He stated he was successful in a good recovery of thirteen of his patients out of the seventeen cases.

Dr. H. McWhinnie cited a case which made good recovery by blistering and hot poultices applied to the spine and mastoid muscles.

Dr. R. R. Bell said that although he did not have the affidavit for this he thought it could be shown to be true, that a horse suffering from a severe attack of tetanus while being taken from his owner's stable to a veterinary hospital in an ambulance, and while passing under the elevated railroad, became frightened and either jumped or fell out of the ambulance to the pavement and immediately got up and walked home "cured by the shock."

Dr. L. Willyoung said he had good success by slinging his patient about three or four days and giving large doses of purgatives, followed by large and oft repeated doses of solid or fluid extract of *cannibis indica*. So far had not lost a case out of seven or eight cases he had treated.

Dr. Wm. Somerville, Jr., thought that the best treatment was perfect quietude, allowing no one to disturb the patient, and giving no medicine except a brisk purgative to clean out the alimentary tract, allowing nature to do the rest. He had treated cases both with this form of treatment and with the many ways laid down in our text books, but had better success by leaving the animal to wonderful *vis medicatrix naturæ*.

Prof. Law said that animals left alone would on the fourth or fifth day be found to be perspiring very much and would do so from twelve to twenty-four hours, when the spasms of the muscles would appear to be considerably relaxed and better, and thought that hot water baths would be beneficial.

Dr. N. P. Hinkley related cases where he had tried the steam baths. In some, "as in other treatments," they recovered and in others they died.

Several other gentlemen continued the discussion of Dr. Morris' paper, which brought out several good bright ideas in the different cases and treatment of tetanus and it was quite late in the afternoon when the discussion closed.

As this was to be a one-day session and most of the gentlemen present had to return home by the early trains, the reading of the other papers was postponed until the next annual meeting.

The meeting was then adjourned until the second week in January, 1892, subject to a call from the Secretary.

N. P. HINKLEY, D.V.S. *Secretary.*

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The Pennsylvania State Veterinary Medical Association held its semi-annual meeting at Wilkesbarre, September 8th, in the county medical hall. At roll call Drs. Kooker, G. B. Raynor, Hart, Shaufler, T. B. Raynor, Hoskins, Goentner, Ridge, Foelker, Stanton, Timberman, Butterfield, Kiel and Sallade were present.

The visitors were Drs. C. H. Good, Kellar, Vanderbilt, Bloom and Walters. Minutes of March meeting read and approved.

Dr. Hoskins recommended we have blank forms for applicants for membership, to facilitate finding the standing of applicant.

The applications for membership were: Drs. Waugh, of Allegany City (presented by Dr. Hoskins); Dr. Kellar, Williamsport; Dr. Good, Lock Haven; Dr. Millar, Jenkintown. Reported favorably, and they were elected to membership.

The Committee on Legislation, Dr. Hoskins, chairman, reported as follows:

"Mr. President and Gentlemen:

"As your chairman on legislation I can only report the most unanimous inaction on the part of your committee for the past six months that have elapsed since its original appointment.

"The cause for this lack of seeming duty is well known to you all. I offer no excuse for its existence, inasmuch as the unfortunate amendment to our act, extending the time of registration of non-graduates, had become a law before your committee knew of its existence, and was conceived and blos-

somed into the mature flower before one-half of those who constituted our legislators dreamed of its possible conception. I would not underestimate the responsibility resting upon those who knew of its probable birth and witnessed its entrance into life ; and who did not at this same time realize the necessity of informing your committee of its existence. The additional registrations, so far as learned, have not been excessive owing to the unusual number who had done so before the first limit of the time had expired. In Philadelphia but four non-graduates have registered since its passage.

“ At present we are pressing fearlessly, through the able and unselfish assistance of Dr. James A. Waugh, of Pittsburgh, two prosecutions on the ground of false statements, registered in Alleghany County, as to the possession of diplomas.

“ One of these unfortunately is a member of this Association, much to our regret, but no leniency will be shown on this ground, as he, above all others, should have known better and well deserves to be meted out a just punishment. What further action remains to be taken between now and January 1st will entirely depend upon circumstances arising from time to time. We believe it is wise to remain quiet until that time lest an unfavorable decision against us would encourage a large number to register, which would necessitate a very great expenditure of time and money to eliminate.

Respectfully submitted,

W. H. HOSKINS, *Chairman.*”

Dr. Waugh will be furnished money for prosecution by the Association. Dr. Hoskins presented a bill of \$26.96 as costs in Lancaster suit, which was ordered paid.

The chairman, Dr. Huidekoper, of the Committee on Intelligence and Education, not being present, the report was made by Dr. Sallade, one of the committee.

“ *Mr. President and Gentlemen :*

“ While nothing of special moment has taken place in veterinary practice since our last annual gathering, nevertheless your committee cannot help congratulating the Society and the profession in general upon the steady advance which veterinary science is making throughout our own country and

abroad ; and while much more might be desired in certain quarters in the way of organization and consolidation, still we have every reason to congratulate ourselves that there never was a time when so many able practitioners were at work, or so many learned publications bearing upon the profession issued from the press in various languages as to-day. The great impetus given to every department of science by the investigating, analytical spirit of the age has fairly taken possession of our particular field, and it is our glory in this land and in this age to be the witness as well as adepts in a most useful science, which was regarded as venerable among the most remote people of whom we possess authentic history. The high antiquity of our profession, the supreme importance which it occupies in the physical economy of our modern society, its eminent respectability withall, at once constitute the guardians of the physical welfare of those dumb animals with which a beneficent providence has been pleased to surround man in order to his aid, comfort and enjoyment ; and thus, in lending our intelligent efforts to the conservation of them, we are indirectly laboring in the highest interest of society itself.

“ It is for these reasons that it well becomes the Society to enlist in its behalf the best intelligence to be obtained, and insist upon a thorough scientific course in some recognized veterinary school preparatory to entering upon legitimate practice, and in this particular your committee feels itself constrained to reiterate with emphasis the various salutary recommendations of former committees on intelligence and education of this Society, and those especially which regard the duration and quality of the course of study to be pursued, as well as the character of the student himself. For it cannot for a moment be doubted that the learning and character of our practitioners will have, I may say, all to do with the shaping of the destiny and the attainments of the ultimate results of veterinary science. And it has for this reason, as well as on account of the close relationship existing between the methods of treating the various diseases of man and beasts, that the veterinarian should, in justice to his pro-

fession, emulate the character and rival the scientific attainments of his brethren of the sister medical profession. Upon the character, as well, of our practitioners, will, in no small measure, depend our success when we knock at the door of the halls of legislation, and demand that protection and pecuniary encouragement which a science so far-reaching in its consequences to society merits, and which we, as its worthy representatives, will have reason to expect will be granted us.

“The age of the so-called ‘Horse Doctor’ is gone forever. We are, instead, an organized body of veterinary physicians, extending the benefits of our science to, and employing our efforts in, a broader and less restricted field than heretofore. The horse is only one of the objects of our professional solicitude. The various species of cattle and other domestic animals, especially those whose flesh is used for human consumption, likewise belong to the sphere of our scientific investigations. The splendid scientific triumphs of recent years in bacteriological and tubercular pathogeny are matters of the most profound interest to the veterinarian, and should engage his most earnest attention. And in connection with this, your committee would suggest that within the jurisdiction of this Society, where so many Jersey cattle are imported and raised, the special study of tuberculosis is absolutely necessary in order that we may be able to intelligently answer the many calls made upon us, since it is quite as certain that the great majority of this breed of cattle is infected with the dread disease in either a mild or malignant form, as it has recently been proved to a certainty that the milk and butter obtained from them carry with them the germs of tuberculosis. And while recommending this special study on account of the peculiar circumstances in which we find ourselves placed, in a general sense, your committee would also recommend, in case the Society still believes the old adage, that an ounce of prevention is worth a pound of cure, the thorough study of prophylactics, always interesting, even when not applied; and thus having, as it were, both ends of the disease, whatever it may be, within our grasp, we will be able the more readily to respond to the.

expectations of our patrons, and the sooner merit the title which it should be the ambition of each and every one of us to covet, the title of *true veterinarian*.

JAS. W. SALLADE, *Committee*.

It was moved that the report be received and a vote of thanks extended to the committee. Carried.

The Chairman of the Committee on Sanitary Science, Dr. Zuill, was not present. Dr. Timberman, one of the committee, said they had no report to offer.

Dr. Hoskins reported that a new veterinary association had been started in Pittsburgh by Drs. Waugh, Carter, and MacNeil, and moved that the Secretary send Dr. Waugh our best wishes, and ask them to send delegates to our next meeting. There being no unfinished business, the Society proceeded to new business.

Dr. G. Meyer having been charged with false registration, the charge was referred to Board of Censors at the March meeting. Dr. Sallade moved to expunge that part of the minutes which records the refusal of the Society to accord honorary membership to the gentleman Dr. Meyer had proposed. Carried. Dr. Hart moved that the code of ethics be read at every meeting, which was lost.

The Corresponding Secretary not being present, there was no report, but he sent a communication stating that Dr. Weber has been very sick with typhoid fever, but was improving slowly. Dr. Hooker spoke of Dr. Weber's misfortunes in sickness during the last few years, when Dr. Hoskins moved that we tender him our sincere sympathies, which was carried.

Dr. Hart said that the President should give us a lecture to improve us in our actions toward one another, to stop this wrangling about the code of ethics.

The Secretary shall be notified by the Treasurer the names of the delinquents, so that they can be acted on at March meeting.

A paper was read by Dr. Butterfield on "Results of Laryngitis."* Then Dr. Hoskins read a paper on "The Vet-

*Published in this issue.

erinarian as a Sanitarian,"—a very able paper.* The Association extended a vote of thanks to Dr. Hoskins, also ordered 1000 copies printed for distribution.

In discussion, Dr. Hoskins said if we had sanitary inspectors we have no laws adequate to the occasion. That is if we discover a case of glanders in the northwest part of the State, we have to send to Dr. Bridge in Philadelphia before action can be taken. We have no members on the Board of Health, nor even recognized by it. The public should be educated up to the point that they will demand laws governing public funerals in case of contagious diseases. He stated that eighty children had died in one town of diphtheria, yet nothing was done to prevent the spread of the disease.

Dr. Sallade was asked his views, when he said he already had expressed his opinion on this subject, as he had read a paper before the Association on "Cremation," and is also a leader in the Bovine Association. He said that Association had brought dollars into his pocket, and had also aroused the people to the dangers in the food supply. He had rid the community in which he resides of tuberculosis in cattle. When a man buys a cow, the Bovine Association sends him to examine the cow, and if tubercular, it is at once dispatched. He gave the symptoms from which he diagnosed tuberculosis: Slight rise in temperature, tenderness along the spine, emaciation, continued œstrum, sibilant rales in lungs.

Dr. Ridge reported a case of abscess in the left guttural pouch,* while Dr. Shaufler thought, as did Dr. Ridge, that it was pharyngitis at first, then extending to pouch, as Dr. Shaufler had a case very similar which he felt very sure was originally pharyngitis.

Dr. Ridge cited a case of gangrene of anterior lobe of lung without being recognized by two good practitioners. Dr. Hoskins thought we might have gangrene of a small portion without it being readily recognizable, but thought we always have an increase in temperature, and as it is very

* Published in this issue.

difficult to auscult that portion of the lung, we have to be on our guard. Dr. Sallade thought the injury was an old one. A vote of thanks was extended for a report of the case.

Dr. Hart said that fifteen years ago no veterinarian would dare acknowledge a mistake. But to-day they will call a brother practitioner in at any time and talk over a case, as true men should do. We are here to exchange ideas; it is seldom we find every one of the same opinion.

Dr. Hoskins reported his visit to the New Jersey Association and expressed himself as being well pleased with his visit. He spoke of receiving a letter from a veterinarian censuring him for encouraging quacks [non-graduates] to join our Association. The paper that the letter was written on was illuminated with a barnyard scene, explaining the place of graduation, etc. It is needless to say that the writer received a very caustic reply. He said we made no mistake when we take in gentlemen who were non-graduates; some of our best workers are non-graduates.

Pres. Kooker advised the local veterinarians to form associations. We should have these all over the State.

Dr. Kellar reported a case of a mare that had a discharge from the vulva. She had aborted a short time before. On examining vagina he could not find anything to cause the trouble, but on dilating he found a hard substance inside. He removed four calculi and then found another one which was so sharp he had to wrap a chamois around it before removing it.

In following July he saw a similar case. The hymen was not ruptured; found os entirely closed; dilated with forceps and removed four calculi. A short time after saw another case of a western mare which had a discharge from vulva, and was returned. On examination he found a calculus in uterus. These stones resembled those lying in the road, and at first he thought they had been placed in the uterus to prevent eversion, as mare aborted a short time before, but when he came to the case of unperforated hymen, he could not imagine how the stones could have gained entrance. The stones were sent to Dr. Hooker to be examined.

Dr. Good reported epidemic ophthalmia of horses around Lock Haven.

Three bills, amounting to \$28.75 in favor of Dr. Gladfelter, were ordered to be paid.

The delegates appointed to attend the United States Veterinary Association were Drs. Folker, Harger and Webster.

After the Association adjourned. Dr. Walters escorted the members and their wives to the Nottingham coal mines. After going down and mining coal the company returned to their homes, feeling highly pleased with the meeting and the kindness shown by the Wilkesbarre veterinarians.

W. H. RIDGE,
Secretary pro tem.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

At the annual meeting of the Keystone Veterinary Medical Association, held at the College of Physicians, 13th and Locust streets, Philadelphia, September 5th, 1891, there were present Drs. Hoskins, Drake, N. Formad, Eves, Goentner, and Kooker.

On motion the reading of the minutes of last meeting were dispensed with, and the election for officers was held with the following result: President, W. Horace Hoskins; Vice President, Hiram Eves; Secretary, W. S. Kooker; Treasurer, Charles T. Goentner. Trustees.—Drs. Weber, Huidekoper, Lusson, Webster and Drake. Dr. F. Bridge was elected associate member.

The chair appointed Drs. Eves, Goentner, and Lusson delegates to the United States Veterinary Medical Association, to be held at Washington D. C., September 15th and 16th, 1891.

Dr. H. Formad was present prepared to read a paper on tubercular milk and meat and its effect on the human family, but on account of a pressing engagement preferred reading it at the next meeting.

On motion adjourned.

W. H. HOSKINS,
President.

W. S. KOOKER,
Secretary.

SPECIAL NOTICE.

The members of the Keystone Veterinary Medical Association of Philadelphia and vicinity, and all members of the veterinary and medical professions are hereby given notice that the meetings of the Association will be resumed at the College of Physicians, 13th and Locust sts., on Saturday evening, Sept. 5th, 1891, and will be held on the first Saturday evening of each month until further notice.

The opening night will be favored with a paper from the pen of Prof. Henri Formad, entitled—"Can Tuberculosis be Transmitted by the Use of Milk?"

The consideration, by so eminent an authority in the scientific arena, of this important subject, which is attracting so much attention throughout the world, should ensure the attendance of every veterinarian in the vicinity.

M. W. DRAKE, *Secretary*.

SOUTHERN VETERINARY MEDICAL ASSOCIATION.

At a meeting of Southern veterinarians, held July 4th, in the reading room of Lick's Hotel, Nashville, Tenn., the Southern Veterinary Medical Association was organized by the following gentlemen: Drs. J. R. Anderson and B. H. Beuter, Louisville, Ky.; J. E. Poe, Knoxville, Tenn.; T. W. Scott of Memphis; W. J. Richardson, Columbia, Tenn.; E. R. Forbs, Chattanooga, Tenn.; J. W. Jamison, Paris, Ky.; T. H. Haggard and W. C. Rayen, Nashville, Tenn.

The following officers were elected: President, Dr. E. R. Forbs; 1st Vice-President, Dr. J. R. Anderson; 2nd Vice-President, Dr. F. H. Haggard; 3rd Vice-President, Dr. T. W. Scott; Secretary and Treasurer, Dr. W. C. Rayen.

After the election of officers and the adoption of a constitution and by-laws, the Association adjourned to meet again in this city October 22, 1891, when it is confidently expected there will be a much larger attendance than at the first meeting.

W. C. RAYEN, *Secretary*.

OBITUARY.

J. F. McGRATH, D.V.S.

We have received the sad news of the death of Dr. J. F. McGrath of Pawtucket, R. I., which took place on the 16th of August, from typhoid fever. Dr. McGrath graduated in the American Veterinary College, class 1887. Respected by all, he had many friends, and his loss is keenly felt by those who knew him. As a practitioner, he was very successful, and, in the few years of his professional life had succeeded in getting a good reputation as a veterinarian.

CORRESPONDENCE.

HILLSBORO, O., September 22, 1891.

Editor American Veterinary Review:

I see it is the sense of the last meeting of the Ohio State Veterinary Association that "horses with undeveloped testicles are not reproductive, but that bulls, rams and boars often are."

I have taken the liberty of presenting a few words from "Sexual Impotence in the Male, (Human,) by Wm. A. Hammond, Surgeon General U. S. A.," etc.

Speaking of hidden testicles he says as follows; "In such instances it is usually the case they are atrophied, and that the sexual power of the individual is very materially lessened. In those cases in which only one testicle has failed to descend into the scrotum the ability to have intercourse is not usually markedly diminished, but when both have been retained it is almost invariably the case that the individual has neither desire nor power, neither orgasm nor emission of semen. In fact, he assumes in many respects, the mental and physical attributes of the female sex. These phenomena are due, not to the original absence of the organs, but to the fact that owing to the abnormal position they occupy, they have not undergone the development which occurs at puberty, and that consequently they fail to secrete semen. Besides this, the organs suffer a positive atrophy, as indeed does every

organ the development of which may be from any cause arrested. But if the individual should after puberty, or even shortly before that period, be deprived of his testicles, though, of course, sterility is the consequence, it is not always the result that absolute impotence supervenes. As we have seen in the foregoing chapter, desire may exist.

"It is equally a fact that in certain rare cases erections and ability of intromission, with the emission of a fluid—composed of prostatic secretions and that from Cowper's glands and urethral mucus, etc.—may take place in individuals who had been deprived of their testicles. In some instances there is a mild kind of orgasm, accompanied by a certain degree of voluptuous feeling.

"Thus Sir Astley Cooper removed both testicles from a man, and the patient four days after had an emission of a fluid from the meatus resembling the seminal fluid. For nearly twelve months he stated he had emissions *in coitu*, or that he had the sensations of emission. That he had erections and coitus at distant intervals, but without the sensation of emission. After two years he had erections very rarely * * * * . Ten years after the operation he said he had during the past year only once connected. Twenty-eight years after the operation he stated that for years he had seldom any erection, and then that was imperfect."

Trusting this may prove of some interest to your readers, I remain,

Yours most respectfully,

S. R. HOWARD, V.S.

POSITION WANTED.

Wanted, by a graduate, a situation as assistant with some veterinarian (hospital in connection with practice preferred). No salary required. For further information, address

SABISTON & MURRAY, 916 Sixth Ave., New York.

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A middle aged, qualified Veterinary Surgeon (M.D., V.S., preferred) who has had an extensive experience, also an established reputation, good character and thorough business ability, with means to take an interest in a large practice.

Address, REVIEW OFFICE.

AMERICAN VETERINARY REVIEW,

NOVEMBER, 1891.

EDITORIAL.

IS THERE A DARK AGE COMING?—Not many years have elapsed since veterinary science had its advent and its representatives began to receive recognition on the American continent. The health and comfort of our domestic animals had always been entrusted to a class of men who lacked almost every qualification for the work they choose to undertake, and it is a literal fact that the title of "horse doctor" was a term of contempt—a stigma upon a man's respectability. The fact is a curious one, but it cannot be contradicted, that when a man undertook the business of alleviating the sufferings, though he at the same time increased the value of the domestic animals, he rather than otherwise, assumed an inferior social rank, or was consigned to it by his fellows. But at length it began to be suspected that this was all wrong, and the self-sacrifice and enterprise of a few gentlemen who were fully qualified for the task, and who soon demonstrated the fact that veterinary science is indeed a science, and requires in its members qualifications fully equal to those of the practitioner in human medicine, opened the eyes of intelligent people to the infamy of the old state of things, and the necessity for a revolution. And at length the point was reached of establishing schools for the equipment in all the necessary accomplishments of knowledge and training, of a community of *veterinary scientists*, not merely so called, but so indeed. The interest which the inauguration of the first schools excited was of a varied and contradictory character. Of course not many felt

any concern whatever in the subject, or had any knowledge of it, while of those who gave any thought to the matter, some cast ridicule upon the idea of having educated "horse doctors," some appreciated the importance and the value of the suggestion, and some indulged in a little, perhaps, excessive enthusiasm in anticipating early results. And amongst them all were those who are always to be found when a serious and earnest purpose is needed to accomplish a good and useful work—men who without being moved by any effervescent excitement, or making any demonstrative exhibition of zeal, quietly and resolutely assumed the burden of the enterprise and bore it forward over every impediment and against every opposition, to the success of which to-day they may honestly be proud.

That the movement has at this period accomplished all that is to be desired or is attainable, no one will pretend; much remains to be done, and certainly American veterinary science has gained nothing that it can afford to relinquish—it has not traveled so far on the road of improvement and mature development that it may safely come to a standstill, and cry a halt; much less can it venture upon a retrograde movement.

The revolution is a success, and there is a proverb which affirms that revolutions never go backward. And this one has not stood still. There is a demand for new schools; agricultural colleges are creating them; old universities are instituting veterinary departments, and States are enacting laws for their organization. Until recently it has been necessary to seek veterinary education in the Eastern States, but the West, with its increasing need in this respect, has claimed her share of facilities, and it is now not necessary to travel far or long to find them.

Yes, the revolution in veterinary practice in America is a success, and all we want now is more of the same kind. Yet there are discouragements. We hear a cry of danger, and we fear there is a severe struggle coming between the true friends of veterinary science and those who are moved by mere mercenary considerations, and would so combine business objects with the promotion of veterinary science as to inflict irreparable

evil upon the latter. We would like to be convinced that the cry of danger is a false alarm, but what are we to think when we hear of the contemplated establishment of new schools, in which the investment of capital for speculative purposes is a leading incident, and a faculty is appointed containing not a single veterinarian of education, and with an empiric at its head to "run the machine?" If this thing has not happened in one of the Northern States, so much the more to the credit of Michigan, or some of her people. And if a college has not been started or contemplated by mere capitalists in another Northern State, so much the less to the discredit of Ohio, or some of *her* people. And what is to be the character of the "Toronto Veterinary Dental School," (LIMITED) which claims to be located in that city, with . . . V.D. for principal? Shall colleges be established which are merely diploma-shops and veterinarian factories, and which offer as inducements to catch the "trade" of "customers," the cheapening and popularizing of our standard of qualifications, in order to make it easy to "get through?"

Shall we veterinarians who love our profession, and who appreciate our calling and its requirements, stand by silent and inert, and permit a state of affairs so disgraceful to continue, without at least a protest and an effort to put an end to it?

For years the United States ignored the value and deprecated the standing of the veterinarian, but after so long we have obtained a shadow of recognition at her hands, and we do not like to contemplate the prospect of losing the little we have gained. Let us by all possible preventive means ward off the threatening danger. It is the duty of every veterinarian to watch the work of the parasites who would ruin a noble cause by assuming to identify themselves with its name and its mission. Would that we could inspire every true veterinarian in the land to combine with his fellows in an effort which should never cease until our most honorable profession is established upon foundations which can never be shaken, and then we should never more have occasion for apprehension of the approach of "A DARK AGE,"

PROFESSIONAL INCREDULITY.—It must cause a feeling of regret to earnest veterinarians to see the very evident incredulity and want of common dependence and faith between veterinarians of different nations or different parts of the same country, or even between neighboring veterinarians engaged in the same line of work. Every journal seems to bear an imprint of some petty jealousy on its pages, and it seems almost impossible to carry on a veterinary association without its meetings being made an airing-place for some undue rivalry. Why is it that we can not, as scientists, accord our co-laborers respect, confidence and esteem?

In the *Veterinary Journal* for Oct., p. 260, Dr. Fleming, in a well-made editorial, prepares the British veterinary profession for a condescension which American veterinarians have long known they would be ultimately obliged to make, and which some few British veterinarians have foreseen, notably Prof. Williams, of Edinburgh. The veterinarians and the government of the United States are fully aware of the importance of our export trade in cattle, and know full well that its value must rest upon the health of the animals offered to foreign consumers, so that it would be a suicidal policy for us to export animals affected with a serious contagious disease.

It has always been asserted, and truthfully, so far as we can yet learn, that contagious pleuro-pneumonia has at no time existed in the cattle-producing area of this country, but has been limited to the dairying districts of the Atlantic seaboard, to a few isolated herds of breeding animals, mostly Jerseys, in some of the western States, (and these were derived from the eastern dairying districts), and to the well known outbreak among distillery cattle and dairy cows in Chicago. The disease has not found entrance into the current of the beef cattle traffic of this country, and there is good reason for believing that it never will. This has been positively asserted and reasserted, and yet English veterinarians have openly disbelieved us, and to prove that we are either incompetent or dishonest have persisted in finding contagious pleuro-pneumonia (?) among our export cattle landed on their shores, and stoutly maintained the correctness of their opinion against our

assertions, and those of Prof. Williams and a few others, that it was not the genuine dreaded lung-plague which they had found. Recently, a few cases of this American broncho-pneumonia reached France in an export cargo, and at first the French veterinary officials suspected lung-plague, but upon a more careful inspection of the affected parts were led to believe that it was some other form of pneumonia, as yet new to the veterinary profession of France, and experiments upon other animals fully demonstrated the correctness of their views, so that so high an authority as Prof. Nocard, of Alfort, states positively that it is not lung-plague, and that in his opinion it is of no moment from a veterinary sanitary-police standpoint.

Clinical and post-mortem observations of this disease have been sufficiently abundant in this country that the matter has been for some time quite clearly settled, and a clear differentiation made between these two pneumonias here, and it has been sufficiently discussed in our veterinary journals, that had British veterinarians seen fit to read and believe careful scientific contributions, the long dispute might have been promptly adjusted; but British veterinarians do not read American veterinary journals, and British veterinary journals quote but scantily from our current literature. Fortunately, owing to early habits, before our own journals were well established, American veterinarians are liberal readers of British veterinary literature, but our journals are entirely too penurious in their quotations from these. A more liberal and cordial spirit on the part of both would doubtless prove of mutual benefit.

Again we have a suggestion of this incredulity in the same number of the *Veterinary Journal*, on p. 272, under the caption of "A Supposed New Disease Among Cattle in the United States of America," in which it is cited that some learned British associations are greatly alarmed over threatened invasion of contagious foot and mouth disease through the importation of American cattle; and all this alarm in the face of positive assertions that we have no such disease in this country. To be sure, we have a few hot-headed, erratic men,

like all countries, who periodically find something of unusual importance, and at once load it upon the telegraph wires, but sober judgment by sober heads promptly do all they can to place matters in their true light. We know that we have quite extensively in the Mississippi valley a peculiar affection of the feet and mouths of cattle, mostly of milch cows, which has occasioned some loss. We saw it for a few weeks in late summer and fall of 1890, when it suddenly fell like some blight over a whole State at once, and then suddenly disappeared as mysteriously as it came. A few weeks ago it again appeared, the same as before, we know not from whence. It has none of the characteristics of the contagious foot and mouth disease, and repeated attempts at transmission have uniformly proven unsuccessful. It seems quite unnecessary for Britishers to become alarmed so long as inoculation from animal to animal gives negative results.

When we had contagious pleuro-pneumonia in Chicago we detected it, notified the civilized world of the fact, said we would stamp it out, did stamp it out promptly, and notified the world that the work was finished, and it *was* finished. When we have a serious contagious disease among live stock we recognize it and openly admit it, and after we have eradicated it we say so, and desire that such assertion shall be accepted as fully as our admission of the existence of the disease. Many of our veterinarians are drawn from England, France and Germany, so that in case of an extensive outbreak of disease we nearly always call in an available M. R. C. V. S., who after a pupilage in England, the source from which nearly all animal scourges flow, is quite competent to diagnose pleuro-pneumonia or foot and mouth diseases.

But this incredulity is not all international, and what we have of it here at home is no more to be prized than that we have already considered. After every animal of the bovine species in the infected area in Chicago had been slaughtered to stamp out pleuro-pneumonia, and every cow-shed had been demolished or disinfected, and the disease had been searched for in every part of Illinois, several western States, through their veterinarians, maintained rigid quarantines against Illi-

nois cattle. They would not believe that the cattle population of the entire infected area of Chicago had been annihilated without actually seeing it, and being too busy to leave their posts of duty the only way left to convince them was to take the infected area to them, along with the scalps of the victims of the stamping-out process.

At about this same time we had an extensive outbreak of dourine or equine syphilis in Illinois, and after all exposed animals had been placed in strict quarantine, and nearly all the diseased ones had been destroyed, certain western veterinarians advised quarantine against Illinois horses, when by shipping the remnant of these diseased animals into another State and thence into the prohibiting State, these veterinarians would, upon inspection, have passed them as sound, so slight were the evidences of disease. The Illinois authorities knew every dangerous animal and held it fully in hand, had the history of each exposed individual, and the veterinarian in charge, by his experience, was able to detect very slight evidence of disease, so that the country at large was rendered as safe as possible, and far more safe than any restrictions that could have been imposed by other States would have secured. Still the veterinary-police authorities of Illinois were not trusted by some.

Another evidence of incredulity, born of unworthy jealousy, is noted among our investigators of animal diseases. Ever since the creation of the Bureau of Animal Industry there have been two distinct parties in the investigation nominally of animal diseases, but really they have been mainly trying to show that the other party is in error. Criticism is good; adverse criticism is excellent, and any work that will not bear it is worthless. But adverse criticism which has for its sole end annihilation is anarchy.

The bickerings and disputes between our Bureau and outside bacteriological investigators frequently become nauseous and have a tendency to remain so. The disputes we have witnessed over the etiological moment of our diseases of swine have not been of a character calculated to demand admiration from unbiased critics. If the conclusions of the

Bureau of Animal Industry on swine diseases are erroneous, the right thing to do is to break them, but first get through with the annihilation and then shout.

Three or four years ago the Bureau was reported as entirely routed, and all its conclusions overthrown by the discovery of an available (secret) vaccine or protective inoculation for hog cholera, but the disease seems just as prevalent as ever, and no one seems to know the place where the great secret of protective inoculation lies buried.

And now from the same laboratory the news is flashed over the wires that again the Bureau is routed, and all its conclusions as to Texas fever totally upset by the discovery of the specific micro-organism; that the discoverer knows how to breed it, and has transmitted the disease by means of his cultivated stock. Just what conclusions of the Bureau are thus upset is not stated, nor are we told what effect this new meteor will have on the Bureau or the health of its chief.

All veterinarians are glad to learn of this discovery, as the United States is annually spending large sums for the express purpose of finding this germ, and it will form the basis for some possibly available remedy in the future. Meanwhile, we are breathlessly awaiting an accurate description of this wily germ, its earmarks, how it is to be recognized, how cultivated and where found.

But could we do away with petty jealousies and have some mutual confidence and esteem for each other and the work of each other, and cease making the destruction of the work of others our sole aim and ambition, it would be worth more than a photograph of the bacillus of Texas fever.

W.

NOTICE.

The fourth annual session of the Iowa State Veterinary Medical Association will be held in the parlors of the Savery House, Des Moines, Iowa, November 12th and 13th, 1891.

S. STEWART, D.V.M., *Secretary.*

ORIGINAL ARTICLES.

KOCH'S TUBERCULIN.

REPORT OF THE TUBERCULOSIS COMMISSION OF THE VETERINARY DEPARTMENT, UNIVERSITY OF PENNSYLVANIA.

In the beginning of the present year a commission consisting of members of the veterinary faculty was appointed by the University of Pennsylvania for the purpose of experimenting with Koch's tuberculin, with the object of determining its properties as a therapeutic agent, its value in diagnosis and its power as a prophylactic. The experiments, however, were especially directed towards determining the diagnostic and therapeutic value of the remedy. The experiments were conducted in the university veterinary hospital with tuberculin obtained directly from the laboratory of Dr. Libbertz of Berlin. In the investigation it was found that tuberculin reacts best in comparatively strong and vigorous animals where the disease is well advanced, but where the disease is limited, or in its incipency, a larger dose is necessary to produce a reaction.

When a reaction occurs, it comes on in from five to eight hours after the injection of the tuberculin, and reaches its height in from twelve to sixteen hours; then the temperature gradually decreases to normal. By the reaction is meant a rise in temperature of from three to five degrees Fahrenheit, acceleration of pulse and respiration and, in short, a general febrile disturbance. In none of the animals treated with the tuberculin was there a loss of appetite or of rumination, except for a few hours during the time when the fever was at its height.

The milk did not appear to be disturbed either as regards its quantity or quality. In one case, No. 5, it will be noticed that the temperature dropped below normal, and remained so for three or four hours; in others again it remained permanently higher than it was before the injection of the tuberculin, as shown in No. 4.

As to the quantity required to give a reaction, it will be seen that in case No. 3 1,000 milligrams were needed; while in case No. 4 a good reaction was obtained with 100 milligrammes.

CASE NO. 1.—This case was a registered Guernsey calf, eight months old, condemned because of its having tuberculosis and presented to the Commission for experimentation. The animal being young, strong and vigorous, and in the early stage of the disease, it was considered an exceptionally good case in which to test the curative properties of the remedy. The temperature of this animal was normal, as were also the pulse and respirations and, to all external appearances, it was a perfect animal.

On April 3d, 1891, at 10 a.m., this animal was given a hypodermic injection of 100 mg. of tuberculin under careful antiseptic precaution; the temperature then registered $101\frac{3}{5}^{\circ}$; five hours afterward it registered its highest point, $102\frac{3}{5}^{\circ}$, this was at 3 p.m.; at 6 p.m. it had dropped to $100\frac{2}{5}^{\circ}$ and afterwards fluctuated between 100° and 102° . Not the slightest physical disturbance could be observed in this animal. These injections were made once a week until May 5th, and in no instance were there visible manifestations indicating the action of the remedy. May 5th the animal received 75 mg. of tuberculin, highest temperature $102\frac{1}{5}^{\circ}$; May 6th received 75 mg., temperature reached 103° ; May 7th, 75 mg., temperature reached 104° ; May 8th, 75 mg., temperature dropped to $102\frac{4}{5}^{\circ}$.

For the next six weeks this animal received 75 mg. tuberculin daily. The temperature continued to gradually decrease until it remained stationary between 101° and 102° . There was no disturbance of the economy other than the rise of temperature, and when repeated injections failed to have an influence in this respect, and the treatment had continued for over three months, the injections were discontinued.

August 5th, the animal, while presenting no abnormal symptoms, was killed and an autopsy made, in order to ascertain the results of the treatment. Prior to death, physical examination revealed nothing but a very slight bronchitis.

The autopsy showed a well marked miliary tuberculosis, and numerous abscesses throughout the lung, varying in size from one-quarter to half an inch in diameter, filled with cheesy pus. The mediastinal glands were several times larger than normal and had entirely broken down into a cheesy mass.

Evidences of lobular pneumonia were found in different parts of the lung. The general distribution of these lesions indicated an active stage of tuberculosis.

These facts certainly indicate that the tuberculin had no effect in curing the disease or even in arresting its progress.

CASE NO. 2.—This was a five-year-old cow, weighing about 700 lbs. When taken into the hospital her temperature was $104\frac{2}{5}^{\circ}$, pulse 114 and respiration 48, shallow and painful; from this time the temperature began to decrease, the pulse and respiration remaining unchanged. The animal died four days after admission, but, twenty-four hours before death, received 100 mg. of tuberculin, from which no reaction resulted. Autopsy showed traumatic pericarditis and pleurisy, no evidences of tuberculosis.

CASE NO. 3.—This was a roan cow eighteen years old and well nourished; supposed to be healthy with the exception of a slight chronic bronchitis. Temperature, pulse and respiration were normal. The injection of 100 mg. of tuberculin produced no reaction. After an interval of one week, 500 mg. were injected without producing a reaction. At the expiration of another week, March 25th, 1,000 mg. were injected; twelve hours afterward the temperature had risen to 104° , thus furnishing a typical reaction. It was noticed that when a marked reaction occurred the temperature remained permanently higher than before; in this case, instead of dropping to normal, it fluctuated between 101° and 102° . On the 4th of April this cow again received 100 mg. of tuberculin, with no reaction.

The autopsy showed very little change on the exterior of the lung; section of this organ, however, revealed miliary tubercles disseminated throughout the lung substance. The anterior and posterior lobes of both lungs contained several abscesses varying from the size of a hazel nut to that of a

hen's egg, and filled with semi-fluid cheesy pus. The mediastinal lymphatic glands were much enlarged and filled with dry material. A few, miliary tubercles were found on the intestines.

CASE NO. 4.—This was a red cow, five years old, in fairly good condition, temperature varying from 101° to 102° , pulse from 50 to 56, respiration 40, cough frequent. Diagnosis: Tuberculosis.

On Feb. 27th injected 100 mg. tuberculin. Ten hours afterward the temperature reached $103\frac{2}{5}^{\circ}$, dropped to 102° and again reached 104° , the second reaction taking place within twenty-four hours after injection. On March 3d injected 300 mg. at 9 a.m. At 2 p.m. the temperature was $104\frac{3}{5}^{\circ}$, dropping in the next nine hours to 102° , and continuing to fluctuate between 102° and 103° , and also remaining permanently higher in this animal than before the inoculation. Autopsy: Right lung filled with large cheesy deposits and numerous cavities. The middle portion of the lung contained large areas of miliary tubercle, apparently of recent formation and associated with a lobular pneumonia. The left lung presented the same general condition as the right. The pleura, both parietal and visceral, was covered with masses of tubercular pearls, as were also the diaphragm and pericardium; in short, the entire serous membrane of the pleural cavity was covered with these growths. The mediastinal glands were enormously enlarged and cheesy in character. The larynx and trachea presented a well marked case of tubercular disease. Many of the tubercles had broken down into ulcers. The pericardium contained several groups of tubercular masses, some of which were found on the valves and under the endocardium. In the abdominal cavity the entire peritoneal membrane was one mass of pearl disease which had extended to the mucous membrane of the intestine and had produced numerous ulcerations. The uterus contained a foetus in the right horn, several of the maternal cotyledons had broken down, forming cheesy masses between the maternal and foetal placentæ. The corion and cord presented a number of pearl-like bodies of various sizes apparently tubercular. The foetus was also

apparently tubercular. (The microscopical examinations of these tissues had not yet been completed-)

CASE No. 5.—A two-year-old Guernsey heifer in the early stage of tuberculosis (diagnosis made from the history of the case.) On the 9th of March injected 300 mg. of tuberculin. The temperature of the animal when inoculated was 100 degrees; five hours afterward the temperature began to rise, and in eight hours reached its highest point, $105\frac{2}{5}^{\circ}$. It then began to fall and at the twentieth hour had dropped to 99° degrees and afterwards fluctuated between 101° and 102° . A second injection of 500 mg. was made on the 25th. This increased the temperature in twelve hours to $105\frac{4}{5}^{\circ}$. Twenty-four hours afterward it had dropped back to $99\frac{4}{5}^{\circ}$. The autopsy examination showed a few small tubercles in the lungs, the latter showing evidences of having undergone retrograde change. Several spots of lobular pneumonia, the largest about the size of a man's fist, were found in the central part of the posterior lobe of the left lung. The pleura presented large masses of miliary tubercle in every stage of development, from the earliest to the calcareous degeneration. Pleuritic adhesions to diaphragm and to chest walls on both sides. Resting upon the sternum was a large mass of cheesy tubercle adherent to both diaphragm and pleura.

The mediastinal glands were of enormous size and had undergone cheesy changes. The peritoneum presented a large number of tubercles at various points and in numerous stages of development; tubercular enteritis well marked. In the lumbar region, along the course of the blood vessels, were a number of dark red tubercles, which, when cut, exuded a dark fluid. Probably this was one of the earliest stages of tubercular formation. The liver, spleen and kidneys were apparently normal.

CASE No. 6.—Was a black cow five years old, well advanced in tuberculosis. At the time of injection, and for several days previous, the animal was very much depressed, pulse not perceptible at points where it is usually taken, extremities cold, respiration thirty-eight per minute and labored. Head extended; animal very weak and in a generally distressed con-

dition, appetite poor, temperature from $102\frac{1}{2}^{\circ}$ to 103° . An injection of 300 mg. of tuberculin increased the temperature to $104\frac{1}{5}^{\circ}$. The animal was killed three days after injection. Autopsy showed all the organs to be more or less markedly affected with tuberculosis. Well marked pharyngitis was noticed.

The following conclusions are given, based upon the results of the experiments:

1st.—That the injection of tuberculin in cows suffering with tuberculosis produces a febrile reaction.

2nd.—That healthy cows do not give a reaction with moderate doses (300 milligrammes).

3d.—That in some instances, tuberculous cattle will fail to give a reaction with ordinary doses of from 300 to 500 milligrammes.

4th.—That injection of the tuberculin causes the rapid distribution of the tubercle bacilli and a generalization of the disease.

5th.—That in none of the tuberculous animals used in the experiments could the least curative effect be observed.

6th.—That cows cease to react after repeated injections of the tuberculin.

7th.—That tuberculin is of value in the diagnosis of tuberculosis in cattle.

BURSATTEE.

BY S. E. PHILLIPS, V.S.

(A Paper read before the Kansas Veterinary Medical Association.)

In selecting this as my subject upon which to make a few remarks, I have done so more with the view of learning others' experience with the disease, than it was to tell you what little I may know about it. And for this reason I shall hope merely to open the way for discussion, which I trust you will take advantage of and I may feel that my efforts have not been in vain.

Bursattee being a disease that is unsatisfactorily explained

and its true nature a mystery, we who have to deal with it in our daily practice should not be content until the veil that now overshadows it may be removed, and if possible that we might receive part of the credit.

Bursattee derives its name from "Bursat" meaning rain; it was supposed to be most prevalent during the rainy season of the year. It has also been called "Rain Sores" for the same reason, but as far as my observation goes, the rainy part of the season has but little to do with the disease, other than this; horses are more subject to injuries then than during dry weather; the harness of horses worked through all kinds of weather becomes wet, muddy and hard and has a tendency to chafe; or the animal may become leg wearied, causing it to interfere, inflicting a wound which in that locality readily admits bursattee germs. It seems that the first bursattee sore an animal has originates from a simple wound becoming inoculated with these germs, or on those animals affected last year, the old sores have only to be irritated by the harness or otherwise, and bursattee sores or ulcers result. I think that you will agree with me that while the rainy season of the year has its influence indirectly in bringing about these sores, the time of the year has more to do with it. Animals suffer from these sores only about three months out of twelve. Curious to know the months it is most prevalent, I referred to our books for the past three years, and find we received a few cases for medical treatment during the last days of June and that it was only a few of the chronic cases that we received after September first, the months of July and August being the principal months. During these months flies are so numerous, the question naturally arises are they the means of spreading the disease from animal to animal and from sore to sore? It is my belief that flies can carry these germs from a bursattee sore, and deposit them into a healthy wound, and unless removed soon by surgical interference will be there to reappear the following season, between June fifteenth and September fifteenth, whether it be a rainy season or a dry one, just so there is enough irritation produced in any way to cause their growth.

I know of no sore that flies have such a particular liking for and it is only by force they are induced to leave, or if allowed their privilege they will stay on these sores in the evening until it becomes quite dark.

As fall approaches flies diminish in numbers, our burasttee patients diminish, the ulcers take on a much healthier action, and although slow in healing before cold weather is upon us we have no more bursattee sores.

There seems to be an itchy sensation associated, and in treating some patients it is almost impossible to secure them that they may not rub the parts, even though the animal be in a dark place and the parts protected from flies. If the animal does not rub the parts and flies are not permitted their liberty, they can be healed quite readily.

Horses and mules alike and under all conditions, whether in perfect health or otherwise, seem to be susceptible to the disease. It is not confined (as some suppose) to animals that are half fed and cared for or housed in poorly ventilated quarters, but on the contrary, it does appear on horses having the best of care and in good flesh. All that is required during its particular season is a wound to gain a foothold, be it on a private driving horse or a street car mule, and then to be neglected by the owner and the result is evident. This sore enlarges and by allowing the animal to rub the parts new ones develop, which coalesce with each other until quite a surface may become involved. The pride that most people have for their private horse enables them to render assistance sooner and care for them better than animals owned by companies. This, with the knowledge that they are not subject to as many injuries, are the reasons we haven't more bursattee sores on private driving horses.

There are a great many theories advanced as to the true pathology of this disease, but when we find that none are fully substantiated we will content ourselves with Prof. Robertson's definition for it. "That it depends on a state of the system not yet defined which he called bursattee diathesis." The first appearance of these sores is characterized by the formation of small soft nodules, either one or many situated

directly under the skin in the cellular tissue; they vary in size when first noticed from a small pea to twice that size. In a few days they become hot and painful to the touch, and have changed from a soft tumor to a hard one; as they grow they become attached to the skin; from this stage on their development is very rapid, and is hastened should the animal rub or the harness chafe the parts. They ulcerate rapidly and discharge a thin yellowish fluid. The sore has a very unhealthy appearance and is usually circular in shape and the same size as the former enlargement. The edges of the wound are raised and ragged in appearance. This ulcerative process seems to undermine the skin surrounding the ulcer, and extending still outside of this we find a dense fibrous tissue, so that in looking upon a sore they do not appear as large as they really are. They are very malignant in nature, and enlarged by these ulcers becoming confluent. Situated on the floor we find little hard eminences called "Kimhers;" they are composed of lime deposit and are very hard. By analysis it has been shown that they contain about ten per cent. of inorganic matter, principally phosphate and carbonate of lime. Their color, as near as I can describe them, is cream white. They vary in size from a millet seed to a hickory nut, and their shape that of a coral with sharp nodules sticking out in every direction and shape. These kimhers may be removed from their place of concealment with a point of a knife, or at times with the thumb and finger. Their growth is very rapid; all of any size may be removed to-day and in three or four days there are just as many there as before. The floor is also covered with a dark red jelly-like substance, which has a very unhealthy appearance. With such an unhealthy looking ulcer, and having this deposit of lime salts, which is diagnostic of this particular kind, there is no chance of being mistaken as to the kind of sore it is. The papilla that covers the floor bleeds easily. The discharge from a bursattee sore, if allowed to flow down over a healthy surface and not washed off frequently, will by the aid of flies, make the parts raw and we have small bursattee sores appearing along its course, which if not molested will increase in size, eventually become confluent

one with the other until a large surface may become involved. Another way that seems to favor their development is when a scab is left to cover them ; it will then have a very offensive smell, kunkers then not only form on the floor, but also around the edges directly under the skin. The scab, while it offers partial protection to the sore from flies, also affords a rich field for the development of kunkers. The healing process is very slow ; ulceration and cicatrization may both appear in different parts of the same ulcer.

It is not very difficult in examining a horse to tell if it has been affected with bursattee ; they always leave scars which are diagnostic. The size of the cicatrix varies as to the extent and kind of treatment the wound has had ; it will be destitute of hair, with a gray, shiny appearance ; it also has much the appearance of a scar caused from a burn. The parts most subject are those most subject to injuries, as the corner of the eyes and face, angles of the mouth, the shoulders, the legs from the knee down, and in fact there seems to be no part of the body exempt, and in Prof. Robertson's work he speaks of their being found in the internal organs, but I have not had the chance of holding post-mortem on a subject that was affected during life. Having over two hundred street car mules under our charge for the past three years has given a good general knowledge of the disease, such as the part of the body most subject, the time of the year animals are most affected, the certainty of its reappearing the following season and its increased severity, the conditions favoring its development and a little knowledge of the best mode of treatment.

Taking the fetlock joint, which is a very common place caused by interfering, we may have the inside half diseased, and when it heals in the fall there will remain quite an enlargement. During the winter months the horse may wound these enlargements to any extent, and they immediately take on a healthy action the same as any simple wound, but during the summer months the wound may be ever so small and the result will be a bursattee sore. The germs of disease are there and when the proper time of year comes

and they have had the desired amount of irritation, they grow, and each year new ones appear on different parts of the body until the animal may appear a pitiable sight.

The general health of animals suffering of this disease is but little impaired. I am sure the disease if left alone will cause death, and perhaps in a very few years, but I have not had the privilege of following a case thus far, and have not heard of such a death, unless the death of an animal reported to us last summer was caused by them. The subject was a family pet, a nice young mare. She was brought to us for treatment three years ago last spring. It was quite an aggravated case; most of the ulcers were confined to the legs from the knees down. By using the knife freely she made a nice recovery. The owner was advised to dispose of her some time before next summer; his wife objecting, and he, himself, not feeling much inclined to part with her, concluded they would chance it again. The result was that at about the same time, the sores appeared again the same as the previous year, only very much worse, and were not confined to the legs only, but appeared in many other places. It was after they had exhausted their skill in trying to effect a cure that she was again brought to us. It was with much difficulty this time that we healed the ulcers. The owner was again advised to dispose of her at any price. The winter passed, spring came, and they still had their pet. Feed being scarce, he decided to turn her out on his ranch, located about thirty miles away, until in the summer some time, when he intended to bring her home. When the proper time came the sores again made their appearance. The owner met me on the street and said he had just received a letter from his man at the ranch saying these sores were worse than ever they had been. The animal was down and could not get up. I learned afterward the animal died. These sores, I think, were the cause of her death.

TREATMENT.

In treating a bursattee sore we find it a very difficult task and shall continue to find it so as long as the true pathology remains a mystery.

As a preventive treatment, which I think is very essential, especially during the months of July and August, there are many things to be considered. The harness should be made to fit, the subject should be shod to prevent interfering, the eyes protected from the annoyance of flies, fresh wounds should be treated antiseptically, after which some kind of oil should be added, or anything that is distasteful to flies; in fact, there is no medicine that equals preventive treatment, and there is nothing neglected so much. The saying is about correct, that an ounce of prevention is worth a pound of cure, at least in this particular disease.

Animals affected should be placed in a dark stall away from flies, and to commence treatment it is almost impossible to accomplish anything without first using the knife, and that quite freely. I have tried picking these kunkers out with some sharp instrument and then scraping the floor with a knife and cauterizing it with caustic, and following up with antiseptic treatment, but generally speaking this mode of treatment is a comparative failure; it takes too long to effect a cure. All of these kunkers are not removed, and they continue to grow. The result is, you can remove some every three or four days for perhaps several weeks. The better plan is to place a twitch on the animal and you are ready to operate on any part of the body. Inject a solution of cocaine in and around the ulcer, and with a sharp scalpel remove not only the ulcer, but also the dense fibrous tissue that surrounds them. There is at times a tendency, owing to the relation of some of these sores with joints, not to get deep enough. The object should be to remove all diseased tissue at the first operation. After this is accomplished, cauterize the entire sore with lunar caustic, or you may use the actual cautery, and dress it daily with an antiseptic lotion, and after each dressing apply some kind of oil that will keep flies away, and in this way the wound may be left uncovered.

I prefer washing these sores twice daily with castile soap and warm water, following with the usual dressing. The antiseptic lotion we think works best in cupri sulphate, acid carbolic, glycerine, aqua ad qs. We then use an oil called

the Mexican Oil; it is very healing. It reduces inflammation, softens the parts, and seems to draw the kunkers, if any remain, to the surface. Besides, flies will have nothing to do with it so long as plenty of oil is there. We find that in commencing the treatment of these ulcers, if the knife has done its part, and by following about this mode of treatment, keeping the patient where he may not rub himself, they may be healed almost as readily as any simple wound. Another secret is, never cover with cloth or bandages, and not allow a thick scab to form; it should be removed each day, and if at any time the entire sore does not seem to be taking on a healthy action it should not be neglected, but with a sharp knife once more endeavor to convert it into a simple wound. It may be necessary in some neglected cases to remove several square inches of tissue, to entirely surround the diseased part, but this should be done, and if possible, at the first operation.

Last summer we had quite an interesting case brought to our hospital for treatment, it being an imported draught stallion. The owner said he tried everything he knew to effect a cure and gave it up in despair. He then commenced corresponding with us. We mistrusted that they might be bursattee sores, and advised him brought to us. On examination we found them to be bursattee sores, two on the sheath and one that entirely surrounded the meatus urinarius. This one was a raw, ugly-looking ulcer which entirely disabled the horse from stud services. It bled quite easily, and caused much pain when the animal attempted to urinate. The knife was again used, in order to remove a portion of the urethra and glans penis; the parts were then cauterized, and our general line of treatment followed, and in two weeks he was sent home with the sores healed. I am anxious to know if it will appear on him again this season after dissecting it out so thoroughly and receiving such a speedy cure.

In examining horses for soundness, we should never omit to look for bursattee sores, and if any are found the animal should be considered unsound, knowing the certainty of their reappearing each season.

During these two or three months of the year, if we are consulted about a sore an animal may have, it is easy to tell what kind of a sore it is from the owner's description of it. He will say, "I never saw anything like it. The longer I treat it the worse it gets, and now I am ready for some one else that knows more about the disease than I do to cure it for me." It is only necessary to tell him what it is and about the line of treatment necessary, and which you would follow if he is satisfied to let you have the case. But if the owner had this privilege of trying to cure it himself, it is best to let him alone. You are sure to get the case later on.

I have endeavored not to dwell at length on any part of this subject, but merely to open the way for discussion.

OPEN JOINTS—ANOTHER TREATMENT.

By C. B. AINSWORTH, D.V.S., Greensburg, Indiana.

Since reading the article in the September number of the AMERICAN VETERINARY REVIEW relating to open joints and a new remedy it stimulated me to write concerning another remedy, thinking some of the members of the profession might try it if they have not done so. My experience with the treatment has been limited, but have had better success with it than with any other treatment I ever tried. That is peroxide of hydrogen ($H_2 O_2$) (Ch. Marchand's), which you will see advertised in the REVIEW.

As we all know, an open joint, regardless of which joint it may be, is serious enough in its character; for if recovery is made in any degree at all the joint is generally left larger, either of a boggy nature, or by the accumulation of organized lymph, or of the bony conformation itself, and very often partial if not complete ankylosis of the entire hock.

As a rule the injury needs treatment for a considerable length of time, and unless you can have the patient under your own supervision the attendant may neglect your directions, and may be not comply with them at all because he may think your treatment is doing no good on account of slow improvement.

I will describe a case which came under our treatment, although the peroxide of hydrogen treatment was not used in this case and the treatment did not prove satisfactory. The patient was a large Norman mare belonging to a farmer, and was driven six miles from home on November 19th, and while standing in the stall by the side of another horse, was kicked on the inside of the right hock. The animal was driven home in the evening of the same day. The driver noticed that she was showing considerable lameness in the right hind leg, but on making an examination he could not discover the seat of the lameness, nor could he discover any abrasion of the skin; so he pulled the shoe off and turned her out in the pasture, thinking she would be all right in a few days, but in three days after she was hurt the owner came and said she was worse instead of better, and wanted us to come and see her. We went, and on making an examination found a direct opening into the tibio-tarsal articulation on the inside of the right leg.

The patient was suffering intense pain; temperature above normal; respiration hurried, which remained so for four or five days, and with but very little appetite, which improved considerably after seven or eight days. After telling the owner it was a bad case and what the consequences would likely be, we were advised to do the best we could for her, as she was a fine brood mare and was supposed to be in foal; he wanted her saved till after foaling time if we thought she would raise the colt. She was about fourteen years old, and had only bred every other year for the last four years.

So we gave the opening an injection of strong chloride of zinc solution, and ordered cold water bathing followed by the application of a strong liniment, three or four times a day.

We went back the next day, taking a sling with us, as she was a heavy mare and had refused to lie down since she was hurt. We put her in the sling in a large roomy box, and as the cold water and liniment application had failed to allay the inflammation to any marked degree, we applied both to the inside and outside of the hock a cantharides blister, which we applied again on the third day. She was kept in

the sling, keeping the bowels in a relaxed condition, with nitrate of potash in the drinking water. With the above care, the blister was allowed to scale off; but seeing not the slightest improvement, and the synovial fluid escaping as fast as it formed ever since our first examination, ten days after she was first put in the sling and the hock blistered, we gave the opening another injection of chloride of zinc solution which was kept up daily, and applied cold water to each side of the hock constantly, by suspending a cask of water above the animal, and by means of two pieces of rubber hose about the size of a rye straw passing from the cask and bandaged to each side of the leg about four inches above the injured joint. The last named treatment was kept up for two weeks, which seemed as if it was going to have the desired effect; the patient in the meantime still remaining in the sling. At the end of that time the zinc solution was stopped, as was also the cold water, and the opening allowed to close, the sling removed and in a few hours the patient laid down for the first time in four weeks. But the injury was still very painful, the mare being large and heavy, although becoming quite emaciated by this time; was unable to rise without assistance, so she was raised by means of the sling after laying about forty-eight hours, and kept in the sling for three days and nights, doing that way alternately for six weeks, but giving the injury no treatment in the meantime. At the end of that time she could raise herself because of her emaciated condition, and her appetite was as good at present as if she had no injury at all. At the end of two months after she was first hurt an abscess formed and opened on the opposite side of the joint from where she was first kicked, which discharged a sanguineous pus mixed with synovial fluid. This was cleansed with carbolic acid solution one to twenty, and washed with the same solution daily, till this opening healed which was three weeks after it first formed. Since the last opening formed, the bony conformation of the entire hock had been enlarging, and by this time the owner, getting thoroughly discouraged, said he would turn her out in the pasture and let her "root hog or die." He did so, taking her a little grain

twice a day, which, with what grass she could get, constituted her rations till the fifteenth of last June, when she gave birth to a healthy, well-developed horse colt, which commenced thriving better than the average foal under the circumstances; the mother doing fairly well with her feed, increased with the different kinds of easily digestible food; but the injury still seemed painful, and she still refused to put much weight on the injured leg. On the tenth of August two more abscesses were noticed forming on the outside of the leg, one opposite the joint and the other five inches above the joint; it was then evidently a hopeless case, but the owner now wished us to do the best we could for her until her colt was old enough to wean. So the abscesses were opened and the pus allowed to escape. Cleansing them daily with carbolic acid solution one to twenty, the lower one healed up nicely, but the upper one was slow to heal. So on the 18th of September, the colt being old enough to wean, the mare was destroyed, the leg amputated above the injury, and the soft parts removed. Found the bony parts considerably enlarged and of a porous nature, with almost complete ankylosis of the entire hock except very limited action in the tibio-tarsal articulation. The diseased bone resembles Fig. IV., Plate II., in Williams' Surgery, sixth edition.

Another case, that came under our treatment July 19th, was a medium sized black mare that had been kicked three days previous on the same leg and in the same place as the preceding case, the opening being straight into the joint and the synovial fluid escaping as fast as it formed. We gave the opening an injection of an alcoholic saturated solution of bi. chlo. of mer., and applied a canth. blister. On the 11th the owner brought her back to the hospital, and left her for us to do the best we could for her; so we commenced the peroxide of hydrogen treatment, giving the opening an injection twice daily of one to five solution in aqua distillata. The constitutional disturbances noted in this case were about the same as in the preceding case, but this case not being so heavy and not with foal could get up and down at will, the discharge from the joint at no time being unhealthy since we began the use of peroxide of hydrogen solution. But ten

days after she received the injury, crepitation could be distinctly heard on moving the joint, which we all know is a very unfavorable symptom; but the peroxide of hydrogen injections were kept up till the first of August, when the opening entirely healed up, and on the 4th of August the patient was discharged, the hock slightly enlarged by the accumulation of organized lymph and the patient still showing considerable lameness; but the last we heard from her she was walking with more ease than when she was discharged.

On July 21st we were called to see a fine mule that had been kicked four days previous on the inside of the right hock, and on making an examination found an opening directly into the tibio-tarsal articulation. The owner had worked her one day after she was kicked, not thinking the injury very severe; still he usually keeps on hand about one hundred head of horses and mules, is about sixty years old and never saw an open joint before; if he did he did not know what it was. So, telling him what it was and what the result would likely be, he said "Go ahead and do what you can for her, for possibly she will make a plug mule, but before she was kicked was valued at two hundred dollars."

The constitutional disturbances were not so aggravated in this case as in most similar ones. We applied a canth. blister to both sides of the hock and prepared a sol. of per. of hy. one to twenty, giving the joint injections of the same once a day. We again saw the case three days after and could notice no change, but ordered the per. of hy. injections kept up daily, and on the 31st the owner reported he thought the case was doing well. We again saw the case October 1st; the opening was closed, the patient walking and bearing almost as much weight on that leg as on the opposite one; no inflammation was detected, but the hock was somewhat enlarged, and the bony structure seemed to be in a normal condition.

Let us hear from more members of the profession that have used peroxide of hydrogen, in regard to its therapeutic value. I find it of value in fistulous tracts of any kind, and have seen it used as nasal injections in catarrhal troubles in solution one to eight in the human, where it was of great service.

REPORTS OF CASES.

AMERICAN VETERINARY COLLEGE.

HOSPITAL DEPARTMENT.

MYOCARDITIS AND ENDOCARDITIS AS A RESULT OF DISTEMPER
IN A DANISH MASTIFF.

BY E. J. NESBITT, D.V.S., House Surgeon.

The patient was received into the hospital August 1st, 1891, with the following history: He was one of a litter of eight pups born in the old country. Was brought to this country when quite young and became the property of Mr. K. when about seven months of age, and is now one year and six months old. He was admired by his owner because of his large size and rapid development. Fearing that confinement in his city home might retard his further development, his owner concluded to send him to the country. This vacation seemed to agree with him, much to the satisfaction of his benefactor. He became fat, coat glossy, and his bones, his owner said, "were getting so nice and large." He was then brought back to the city and gained many friends, among them being a lady, friend of the family, who asked to have the dog go with her to Long Branch for the summer. His owner being willing, Nero went with the lady to enjoy surf bathing on the Jersey coast. He had not been there long when it was observed that he left his feed, his coat became rough and stary, and he lost his usual vim, becoming dull and inactive. This worried the lady and she sent him home to his master. This change did not have any beneficial effects, for he kept on losing flesh and became very dull. Because of this the owner brought him to us and upon examination it was found that nearly all the joints of the extremities were swollen and painful on pressure. When made to move he showed a very stiff gait. The mucus membranes were congested. These facts, together with his being constipated and in a poor general condition, made us call his case one of rachitis. His ears were in a fearful state, not only

being filthy, but discharging a mean-smelling fluid. This latter trouble was auricular catarrh. The treatment adopted was as follows. For the constipation;

R. Olei Ricini, ℥i.
Syr. Rhami Cathart, ʒss.

M.

For the auricular catarrh, a ten per cent. solution of peroxide of hydrogen was sprayed into the ears after they had been thoroughly cleansed.

For the rachitis, careful nursing with phosphates. In due time the cathartic acted and the catarrh gradually succumbed to the treatment, but his general condition remained the same. We then gave him raw meat with bone dust sprinkled over it. Of this he ate at first sparingly, but in a short time began to like it, and in this way we coaxed back his appetite. He began to move with greater ease and his coat began to look glossy and lay flat. He kept on improving until he had been here ten days, when a change was observed. He lost his appetite, began sneezing and coughing, his eyes and nose began discharging, the mucus membranes were congested, became very weak, respiration became hurried and pulse very rapid; his temperature was 102° F. Besides this, there was the characteristic odor of distemper, which proved to be the cause of this sudden change. He was immediately put under quinine and alcohol, together with careful nursing. He seemed to fail for four or five days and then we gave him a tea made of milk, concentrated beef and gluten. This had been given only a short time when an improvement in the appetite was observed. Then as soon as he began eating an improvement in his general condition was obvious. His temperature dropped, pulse and respiration became less frequent, and the discharge gradually ceased, and in a short time he was, as we thought, out of danger.

The glary condition of the eyes passed away, and he rapidly gained flesh and strength. The fact of his doing so well made us think of sending him home, and we had even gone so far as to inform his owner of his condition, telling him that he should call for him, when on the morning of the 28th he

was found dead. The suddenness of his death aroused our suspicions and a post-mortem was held.

The autopsy revealed at least two very interesting specimens. At the post-mortem table the following notes were taken: Condition fair; coat smooth; blood of good quality; muscles normal in color and consistency; fat is evenly distributed; the respiratory, digestive and urinary apparatuses normal; the peritoneum was slightly injected. One of the interesting specimens just alluded to occurred free in the peritoneal sac just under the left kidney. It was a beautiful specimen of *Eustrongylus gigas*. This parasite, according to Cobbold, is very common in carnivorous animals. Very commonly found in the kidney, ureter and bladder of these animals, but nowhere can I find a case recorded where it has existed free in the peritoneal sac. The same author says it is more often found in fish-eating animals.

Furthermore he says, "It is by far the largest nematode known to science, the male sometimes measuring a foot in length, and the female more than three feet, whilst the breadth of the body reaches half an inch in the thickest part." The specimen obtained by me was ten and one-quarter inches long, of a bright red color, as thick as a stone slate pencil. Through the body ran a very much circumvolved white band, about one line in width, from the mouth to the anus. At the head were easily seen the six wart-like papillæ described by Cobbold, and at the anal extremity is the cup-like structure which is of a pure white color, and which partly conceals a single spicula. How did this worm get into the peritoneal sac? The kidneys offered no evidences of a rupture by which this worm might have dropped into the peritoneal cavity. How it got there is to me a mystery. The next interesting point came when we examined the heart. This organ weighed between nine and ten ounces. The pericardium was normal. The muscular tissue showed evidences of an active inflammation, especially around the left ventricle. There was discoloration of the parts. The endocardium was the seat of a very severe inflammation, especially that lining the left ventricle. One of the flaps of the bicuspid valve had a

large fungoid growth about the size of a beechnut fastened to it. Besides this, in numerous places were small ulcerations and in other places small nodular growths. This undoubtedly was the cause of his sudden death, and serves very well to illustrate how distemper may be complicated and terminated.

THUMPS ACCOMPANIED BY SPASM OF THE MASSETER MUSCLES
—OR TEMPORARY LOCKJAW.

BY THE SAME.

On the evening of September 23d I was called to see a brown gelding about six years of age. On questioning the groom, I obtained this history: the horse had been out to pasture for six weeks and had had no grain. He was brought to the city last Saturday, the 19th, and was cared for as he had been before he went to the country—fed grain and given the usual amount of exercise. He was driven a distance of about five miles and then put in the stable, when it was observed he began to breathe very rapidly and sweat profusely. When they tried to remove the bit great difficulty was experienced, the jaws being firmly set; for this reason I was called. On examination I found the temperature 101° , pulse so fast I could not count them, the artery being like a piece of wood; the membranes very much congested; breathing about 80 per minute and at the flank a plain thump was seen; the jaws were closed and could not be moved; the masseter muscles were hard and prominent. A slight stiffness behind was also noticed. I made a diagnosis of thumps with a spasm of the masseters. For treatment I ordered absolute quiet and as soon as able, drinks of whiskey. I then left. When we called this morning, I was told, that gradually he stopped thumping and cooled off, and about ten o'clock his jaws became loose and he ate hay and drank freely of whiskey and water. This morning his temperature, respiration, and pulse were normal. He had eaten his usual breakfast and was all right to all appearances. Walking exercise was ordered.

Thumps pure and simple are not uncommon among light roadsters, but it is very rarely accompanied by the locked jaw. I think the cause of it was the sudden change of food and the hard drive on a very warm day.

CHOKE IN A DOG—ŒSOPHAGOTOMY—REMOVAL OF A LARGE
PIECE OF BONE.

By E. B. AOKERMAN, D.V.S., House Surgeon.

The patient was a little Scotch terrier pup, about six months old. One day after the dog had been picking in some bones the owner noticed a large swelling under the neck, which was painful and sometimes caused the dog to gag; when offered food he refused all except a very little milk and water.

The dog was more or less lively at times, and when owner touched dog's neck, it would make the dog act sick again for awhile. This went on for about a week, when the owner took the dog to his family physician, who diagnosed a case of choke from a bone in the œsophagus, and advised the owner to bring the dog to us.

The dog was brought here on October 5th, 1891; he had a large swelling on the underside of his neck, situated in the middle of the cervical portion of the œsophagus; you could feel a foreign body—apparently a large piece of bone. This swelling was very painful to the touch.

We cut down on it so we could see a portion of it, then we took hold of it with our forceps, and extracted it. This took considerable force, as the muscular coat was so constricted around it or it was so firmly imbedded in the œsophagus.

The bone measured four inches in circumference, seven-eighths inch thick, one and three-eighths inch long, one and three-eighths inch wide, and weighed eighty-six grains. It was a piece of the large trochanter of the femur of some small animal.

After extracting the bone the dog regurgitated some of the contents of his stomach; this he did for a day or two in small quantities.

We kept the wound perfectly clean with antiseptic washings, and two days after he stopped discharging his ingesta from the opening and the wound was granulating nicely; by the third day the swelling had subsided almost entirely and the granulations healthy.

He was discharged on the fifth day with the wound almost entirely well. The interest of this case is the large size of the bone compared with the small size of the dog.

SUPPURATIVE ENCYSTED KIDNEYS.

By P. JOSLIN, V.S.

I don't know as this will be of interest enough for you to give it any notice ; if so you can make a note of it. On October 6th I was called to visit a black mare thirteen years old, about sixteen hands high, and found her very much reduced in flesh ; limbs swollen a little and apparently lame in the off hock joint ; pulse 60 : temperature 104° ; appetite capricious ; examined ; over the kidneys found no tenderness on shrinking from pressure of the loins ; diagnosed indigestion with fever ; left remedies indicated, with orders to give bran mash. October 8th saw mare ; found appetite improved a little ; pulse 70, and weak ; temperature 103° ; and swelling gone from the limbs except the off hock joint, which was very much swollen and very painful ; would hold it up most of the time ; prescribed lotion for leg. Nine o'clock in the evening mare laid down and struggled with pain until she died at 1.30 o'clock.

October 9th made autopsy at four o'clock P.M. ; found left kidney encysted in a thin sack and surrounded by a fleshy tumor as large as a man's head. The substance of the kidney was all soft suppuration. On cutting through what should have been the kidney into the tumor, it discharged about one quart of white pus, the consistence of cream. The liver and spleen were congested ; bowels normal and all of the internal viscera except those named.

One thing I will mention. About four years ago this mare had a calculi extracted from the bladder weighing nearly one pound, and two years ago another about the size of a small hen's egg, which I have in my possession at the present time.

CHLOROFORM AND COCAINE IN NEUROTOMY.

BY JAMES HENDERSON, M.R.C.V.S., (Edinburg).

The expediency of performing the operation of neurotomy, or more properly speaking neurectomy, is still, in the minds of some practitioners, a method of doubt; but its value as a means of relieving foot lameness will not be considered in the following remarks; their purpose is only to offer a few observations upon the relative merits of chloroform and cocaine as suitable anæsthetics in the performance of the operation. The writer had the pleasure of assisting at two such operations, both performed by Professor Walley, of Dick's Veterinary College, Edinburgh, in which chloroform was used in one case, and cocaine employed in the other; and a description of the essential points of difference on the production of anæsthesia in each, will aid us in the consideration of this subject.

In the operation in which chloroform was used, the patient was a small bay mare over twelve years of age; she was suffering from navicular disease. After being cast, chloroform was administered by means of a sponge applied to the nostril. Before any incision was made a linen bandage was rolled tightly on the part, beginning at the hoof and extending upwards to near the knee; the object of this was to remove as much blood as possible from the part to be operated upon, and to retain the effect of it, an elastic tourniquet was then applied three or four inches above the site of the higher operation. The bandage was then removed, the incision made, and the nerve dissected out. About three-quarters of an inch of the plantar nerve was cut out and the wound treated in the ordinary way. When the nerve was found and manipulated, the mare showed marked signs of sensibility, and when it was cut she started violently. No bad effects followed the use of chloroform in this case.

In the second case, the patient was a sorrel mare, slightly larger than the first, aged, and suffering from ring-bone. Before casting, cocaine was injected at the site of the higher operation, by means of a hypodermic syringe. About a

drachm of the ten per cent. aqueous solution of the hydrochlorate was used. The hæmostatic precautions were the same in both cases, and in each case procured an almost bloodless operation. In the latter case there was some swamping of the tissues with clear fluids, composed probably of lymph and the cocaine solution. The local anæsthesia produced by the cocaine was so complete, that during the dissection of dermal, connective, and nerve tissues, the mare never once quivered. So much was this the case that a little comparative examination was required to distinguish the nerve from the artery.

It is stated by some that the death rate of horses due to the use of chloroform is five per cent. The dangers to which the patient is exposed by this general anæsthetic are chiefly respiratory and cardiac arrest, and proneness to hæmorrhage induced by the lowering of the tone of blood vessels and their consequent dilatation. The danger of constitutional disturbance from the use of cocaine is practically *nil*. The temporary loss of sensibility in the part may continue for a length of time not exceeding a few hours. One great advantage of cocaine over chloroform, especially in minor operations, lies in the fact that it can be employed where the risk of death by use of chloroform would be excessive, as for instance in cases in which the patient suffered from any form of heart disease, or of any chronic affection of the respiratory system, as emphysema, lung consolidation, or roaring. The question resolves itself into one of general versus local anæsthesia. It is undeniable that, in most major operations, general anæsthesia is absolutely necessary, and patients suffering from serious defects in their circulatory or respiratory systems may, on their account, be beyond the reach of surgical interference. Still, in veterinary practice many operations are undertaken by aid of general anæsthetics, which might safely be performed under a local one. The more general use of local anæsthetics should be encouraged, because it is the more scientific, that is to say, if in an operation there is a choice between a local and a general anæsthetic, the former should be chosen every time, because it eliminates from the case the con-

stitutional and surgical risks already pointed out, and also the certainty of lowering the vitality of the patient, which is the physiological sequence of general anæsthesia. Careful observation combined with scientifically conducted experiments, will probably demonstrate that operations hitherto supposed to be impossible, except under a general anæsthetic, will be found to be not only practicable but safe under a local one.

LARYNGITIS AND ITS RESULTS—"VAPOR AS A THERAPEUTIC AGENT."

By L. T. WILLYOUNG, D.V.S.

While reading the articles in your last number on "Laryngitis and Its Results," and "Abscess of Guttural Pouches," it occurred to me to suggest a remedy which I have used for some time past, which, in a measure, prevents the bad results following this disease, especially post-pharyngeal and guttural abscesses.

September 9, 1891, a chestnut gelding six years old was brought in for treatment. Had refused to eat; head hung low; visible membranes injected and conjunctiva swollen; had a very painful cough; respirations loud and hurried; pulse 70; temperature 106° F. All attempts at swallowing were unsuccessful, violent fits of coughing being produced. Diagnosis, acute laryngitis. Prescribed,

R

Cinchonidia,	} aa 3 ij.
Fl. Ext. Bellad.,	
Glycerine.	

Tinct. Fe. 3 j

every three hours given with a syringe. Applied a mild embrocation to the throat; adjusted a jowl-hood, and clothed him warm. After twenty-four hours, as the case had not improved any (pulse 70, temperature 106½°), I continued treatment, and in addition allowed him to inhale "vapor" from vinegar placed over an oil stove, steaming him from thirty minutes to an hour four or five times daily.

After two inhalations the animal's breathing was less son-

rous, the cough more free, and a copious discharge of clear, healthy mucous. September 11th, temperature 105° , pulse 60. Patient partook of mash and hay, and for the next five days improved rapidly; discharge from nose being copious and free from foetor.

A peculiar feature of the case was the temperature remaining stationary 105° for five days. After the third day I dropped the use of cinchonidia and gave no antiseptic at all. The above condition was, no doubt, due to a fleshy condition of the animal, there necessarily being greater oxidation, through lissen metamorphosis, the stored accumulation of nutritive elements maintaining the animal strength.

The therapeutic effects of vapor with some aromatic added (as peppermint leaves, spruce or hemlock twigs) cannot be overestimated. I have always used it, and with success. It facilitates an early discharge of mucous and retards abscesses. It allows the animal to partake of and swallow food earlier; often dispenses with the operation of tracheotomy, and I have never had a hemorrhage in a case where this was resorted to.

To obviate the difficulty experienced in giving medicine in drenches, a long-nozzled syringe should be used, the medicine slowly injected over base of tongue, when it will be readily swallowed, at the same time producing a beneficial local effect.

In the case alluded to we had luxation of the patella in right limb, two weeks after recovery, and has since given no little amount of trouble. Why may not this be a result of laryngitis indirectly, as case had met with no accident after recovery. It is noted, however, that luxation of the patella is often a result of any debilitating febrile disorder.

EXPERIMENTAL PATHOLOGY.

HEREDITY OF TUBERCULOSIS.

This important question was presented at the Congress on Tuberculosis, and answered by Dr. Wignal as follows:

I have tried, by numerous experiments, to elucidate the question of the heredity of tuberculosis. Inoculations of portions of foetal organs or of still-born foetuses from well-marked tuberculous mothers were made on guinea-pigs, divided into series. Portions of placentas, crushed like the preceding, in sterilized salt water, 7 (per cent.), were also inoculated to other pigs; and in a third group of experiments inoculations with the sputa or portions of the organs of the tuberculous mothers were made similiarly to others.

These experiments have given results uniformly negative to the assumption of the transmissibility of tuberculosis from mother to foetus. Indeed, while the guinea-pigs inoculated with the organs and sputa of tuberculous mothers died with tuberculosis, on the contrary the twenty-four guinea-pigs inoculated with the organs of children issued of tuberculous mothers and the eighteen treated with the portions of placenta remained healthy.

In another series of experiments, I also tried to determine if, in a direct experiment upon animals, transmission from the mother to the foetus could be obtained. With this object, I innoculated five female guinea-pigs in the peritoneum with the bacillus of Koch; the livers and spleens of the eleven young ones issued from these females were inoculated to nineteen guinea-pigs, some of which are yet living; others were killed after five months and none of them presented the slightest indication of tuberculosis.

From the above the author concludes that heredity of tuberculosis is far from being fatal or even frequent, but on the contrary seem to be extremely rare.—*Journ. Soc. Scient.*

RESISTANCE OF THE RABID VIRUS TO THE ACTION OF LONG-CONTINUED COLD.

Mr. A. Chauveau has presented to the Academy of Medicine of Paris, in the name of Mr. Jobert, the report of the following experiment :

“ A rabbit inoculated with rabies, of which it had died, is placed the same day in a cool chamber and submitted to cold

of -10° F. During the ten months it was left there, it was exposed to temperature varying between -10° and -20° , especially in September, 1890, December, 1890 and March, 1891. On the first of June the rabbit was taken from the cool chamber, conveyed in an elevated temperature upon a journey that lasted five hours, after which he was entirely thawed out. He was then again placed on ice and the next day the extraction of the spinal cord was performed, to test if the rabic virus had resisted the prolonged action of cold.

With the bulb, which appeared like that of a rabbit just killed, perhaps of less consistency, a large and strong rabbit was inoculated by trephining. On the fourteenth day he was sick, and died paralytic on the sixteenth day. With its bulb five other rabbits were inoculated, through the anterior chamber of the eye: one died the next day from traumatism foreign to the operation, the four others succumbed with all the symptoms of paralytic rabies. The bulb of one of these animals was used to inoculate two other rabbits through the eyes; both died with rabies.

To make the experiment more positive, two rabbits were inoculated with the bulbs of these last animals; each rabbit received one inoculation from one bulb only. These also died with rabies.

Conclusions:—With the four successive series of inoculations, rabies has always taken place and “*it seems evident that cold has no action upon rabic virus.*”

Mr. Laquerriere has already proved that the virus of pleura-pneumonia can be kept for a long time when exposed to intense cold. If the same can be said of the vaccine for rabies or other vaccine fluids, the work of the preservation of prepared vaccine will be considerably simplified. The results of the experiments obtained by Mr. Jobert seem to indicate that this mode of preservation is possible.—*Jour. Soc. Scientif.*

EARLY DIAGNOSIS OF BOVINE TUBERCULOSIS BY EXAMINATION OF THE OCULAR HUMORS.

Mr. L. Mandereau has made numerous investigations in

this direction, and says that he has found in the aqueous humor of bovines the bacillus of Koch, existing with the lesions, generalized or local, of the lungs, pleura, bronchial glands, mesenteric glands, spleen, liver, whether in local eruptions or general manifestations.

In other words the aqueous humor has always been found well provided with the Koch microbe in all cases of generalized disease, and in those where it remained localized to the thoracic or abdominal organs, or localized to the lungs or only to the liver.

Consequently the author concludes: the examination of the aqueous humor is an excellent way to establish the early diagnosis of the disease when symptoms are yet indefinite in their expression.

The puncture of the cornea with a sterilized glass pipette is the simplest operation which will allow the gathering of a sufficient quantity of the humor for examination.—*Soc. de Biolog.*

EXTRACTS FROM FOREIGN JOURNALS.

TWO CASES OF EQUINE TUBERCULOSIS.

By E. FAULKNER, M.R.C.V.S., Manchester.

In view of the alleged rarity of tuberculosis in the horse, I think it right to put on record the two following cases, which have come under my observation within the last two months.

CASE I.—Regarding the clinical history of this case I am, unfortunately, not able to give very minute details, as the animal was not during his illness under my care. The facts that I have been able to ascertain on this head are the following:

The subject was a black draught gelding about eleven years old. He had been in possession of the same firm for over five years; and, save for the three months preceding his death, he had during the whole of that period been in good health, condition and spirits. He was a good worker, and was regularly employed in carting hides from the different skin yards to the railway station.

About three months before his death he began to lose appetite, and rapidly became emaciated. He was placed under treatment and well nursed, but his condition steadily became worse, and he was destroyed on the 7th of February last. On making a post-mortem examination I discovered the following lesions :

The mesenteric glands were greatly enlarged, being converted into a bunch of tumor-like bodies, varying in size from a pigeon's to a goose's egg. Both surfaces of the diaphragm were studded with flat fleshy nodules, the largest of which were somewhat mushroom-shaped, and nearly two inches in diameter at their widest part.

The spleen weighed eight pounds, and its capsule showed several yellowish white nodular growths similar to those on the diaphragm. Its lymphatic glands were enlarged, and projecting from the hilus there was a firm mass as large as the two fists. On section this proved to be a tumor-like growth, which at its periphery extended irregularly into the substance of the spleen. Its consistence was sarcomatous, at some parts almost brain-like, and it showed some caseating points.

The lung was beset with nodules varying in size, the biggest being larger than a pea. It also contained larger and more irregularly shaped areas of the same sarcomatous appearance. None of those showed distinct caseation, but at one point underneath the pleura there was an irregularly wedge-shaped mass, the centre of which was caseous but firm, while its outer part was necrotic. Between these lesions the lung tissue was congested.

Portions of the diseased organs were sent to Professor M'Fadyean, who reported that he had no difficulty in discovering tubercle bacilli in the lesions.

CASE II.—The subject in this instance was a bay draught horse eleven years old. He had been in Manchester for about four years, for three of which he was in fair condition and doing regular work. During the past year he had fallen off in condition, and he had occasionally to be placed under tonic treatment and allowed rest. About the beginning of

February last he contracted epizootic influenza, and under this he became so emaciated as to cause me to suspect the existence of organic disease—probably tuberculosis. I therefore advised his destruction, and he was killed on the 23d of February.

Post-mortem.—The mesenteric glands were in much the same condition as in the previous case. The peritoneal surface of the diaphragm was almost completely covered with a fleshy new growth about two inches in thickness.

The spleen was not much enlarged. Its surface carried some fleshy new growths, but none were present in its substance.

The lung was filled with large miliary tubercles.

In this case also the diagnosis was confirmed by the discovery of tubercle bacilli in the lesions by Professor M'Fadyean.—*Four. Comp. Pathol. & Therap.*

A CASE OF EQUINE TUBERCULOSIS.

By M. TAILBY, M.R.C.V.S., Birmingham.

The following makes another addition to the growing list of cases of tuberculosis in the horse.

History.—The horse was a black gelding, age about eight years. He was brought to me with the history that he had been purchased three weeks previously, and that it was only recently that he had been noticed to be dull and not feeding well. I ordered the man to cease working him, and promised to call and examine him more minutely next day.

This I did, and I then found that his appetite was still failing, his pulse 55 and temperature 103° F. He continued in much the same condition for about twelve weeks, the pulse varying from 55 to 60, and the temperature from 102° to 103°. Latterly his breathing became a little accelerated, his pulse more feeble, and the visible mucous membrane more pallid. Signs of dropsy began to show themselves about his hind legs and sheath, and it was evident that he was losing flesh daily.

Diagnosis.—From the resemblance which the case bore to

a previous one of what I took to be lymphadenoma, I came to the conclusion that the horse had a tumor in connection with some of his viscera—probably the spleen; and as there seemed no hope of his recovery, I had him destroyed.

Post-mortem.—The mesenteric glands were enormously enlarged, the group being converted into one huge mass, in which the individual glands were scarcely distinguishable. They were very firm, and on section they were seen to be extensively caseated. The mass weighed over forty pounds.

Both kidneys were much enlarged, but showed no visible alteration of structure.

The lungs were uniformly filled with nodules, varying in size from a pea downwards. These nodules showed no distinct caseation. The two lungs together weighed seventy pounds.

Portions of the diseased organs were sent to Professor M'Fadyean, who informs me that he found tubercle bacilli numerous present in the caseating mesenteric glands.—*Ibid.*

DELIVERY OF A FOAL PER RECTUM.

BY JAS. COOKE, F.R.C.V.S.

As the foaling season is at hand the following communication may prove interesting to those who have not had the opportunity of meeting with a similar case. The subject was a bay mare six years old, belonging to Henry Lawly, of Seamer, near Scarborough. I was given to understand she was foaling a little before the usual time, this being her first foal, and that she was somewhat vicious, and would require to be carefully dealt with.

On my arrival at the farm I found her in a loose box, and laid on her near side; one leg of the foal was protruding through the rectum; she made no attempts to get on her feet, but kept straining violently. On making a further examination I found the other fore foot in the rectum, and the nose between the fore legs; before I had the opportunity of placing the foal in a natural position she gave one violent strain,

and forced the head partly outside the rectum. The anus being sufficiently relaxed I determined on bringing the foal away in its present position, and found no difficulty in doing so; in fact if she had had sufficient time she could have forced it away without any assistance. It was a fine, healthy, full-grown animal, but unfortunately the mare would never take to it, so that it had to depend upon artificial support. The mare had now a stimulating draught given, and some gruel, which she drank heartily, and then immediately jumped on her feet. A singular circumstance in the case is that she never showed any febrile symptoms, the breathing was quiet, and the pulse only 48, except on the tenth day after foaling, when the breathing became accelerated, and the temperature slightly increased; on this day the foal died from the attendant's neglect.

On examining the mare internally, the floor of the rectum was found to be lacerated to such an extent as to admit of the foal coming through; the anus and sphincter muscles were intact, and did not show any signs of laceration—an unexpected result considering the great amount of distension they had undergone. After a time the lacerated parts contracted, and ultimately the rent diminished to about three inches, which always remained, and during the act of defecation the fœces would drop into the vagina, necessitating their removal occasionally, and when micturating the urine frequently passed out of the anus.

On my calling one day within a month after she had been foaled, I was annoyed to find the animal had been at work for some days; within a fortnight after that she had an attack of laminitis which resulted in pumiced feet.

The treatment for the first few days after foaling consisted of hot wet rugs to the loins for several hours daily, which were replaced by hot dry rugs; and bandages to the limbs. An ointment composed of vaseline, carbolic acid and oxide of zinc was applied *ad libitum* to the lacerated rectum by means of a wooden spatula, and an injection was given daily of warm carbolised water. Internally, stimulants were given two or three times a day and a few ounces of linseed oil occasionally the diet being of a pultaceous kind.—*Veter. Record.*

LAMENESS—FRACTURE OF FIRST RIB.

BY W. WILLIS, M.R.C.V.S.

The interest evoked by the publication of an account of "a case of lameness associated with broken first ribs" in *The Record* some months back, induces me to send the following notes.

On the Saturday before Whitsunday my attention was called to an old brown harness horse. I was told that shortly before my seeing him he was being driven through Bishopgate Street, and had reared up on seeing some paper in the roadway; he came down on his feet, lurched forward, and fell on his near side. On rising he was at once noticed to be very lame.

I found him excessively lame in the off fore leg. He stood with the shoulder hanging down and the elbow far below its normal position; the knee and lower joints were flexed. When compelled to move it was seen that though he could advance the limb fairly well he was incapable of bearing any weight on it. So soon as he attempted to move the opposite limb forward, the elbow sank markedly, and he was in danger of falling. The symptoms remained practically the same till the following Thursday, when he was destroyed. This was accomplished by bleeding him to death, his head being tied short up to the wall the while, so as to prevent him doing any injury to the ribs in falling if despatched by the pole-axe—a possibility suggested by one of your correspondents.

On making a post-mortem examination I found the caput magnum and caput medium of the triceps extensor brachii perfectly healthy. The caput parvum and the anconeus were both pale—particularly the latter, more than usually moist, and the fibres seemed separated up. The first rib on the right side was broken completely through, near the head, and the broken ends were in places seen quite smooth and bright by rubbing against each other. There was a very small amount of effusion around this lesion, and so far as I could discern, the vessels passing out of the chest to supply the limb were in no way interfered with. The nerves supplying the limb

seemed equally free from injury. In this respect this case differed very materially from the one recorded some time ago, where nerves and vessels and muscles were all bound together by dense fibrous tissue. The lameness in the two cases were practically identical.—*Ibid.*

ARSENIC IN SPECIFIC OPHTHALMIA.

By R. C. IRVING, F.R.C.V.S.

I use the term "specific" in this connection because it has been so used before, but I mean nothing more than that the inflammation of the eye did not arise from any apparent external cause.

In March of last year I was desired to see a gray hack which had only been in town about ten days. Both eyes were closed, and tears were running from between the eyelids: when the eye could be seen, the whole anterior surface was cloudy and the conjunctival membrane was much injected. Warm fomentation was ordered and an aperient given, but little benefit was derived from this treatment during the two days it was tried, excepting that the conjunctiva seemed less irritable and not so red as before. The eye itself could be better seen, and instead of the cloudy appearance first noticed I discovered that the cornea was not much altered, but the aqueous humor as seen through it seemed cloudy and blood-stained. On inquiring if the horse had ever been similarly affected I was told it had, just about a month previous to this attack. I then diagnosed the case as one of periodic ophthalmia and treated it with a colyria of sulphate of zinc, ten grains to the ounce of water. I also administered arsenic in five grain doses daily. The eyes began to improve rapidly—the upper part of the aqueous chamber becoming clear, whilst the lower portion became less milky and more of a clouded purple tint. It seemed as though blood had been effused into the humor and was slowly gravitating to the lower part. Gradually all the cloudy and purply appearance of the eye disappeared, and at the end of three weeks both eyes seemed quite normal in appearance.

Remembering the former attack I continued the arsenic for another fortnight, reducing the dose to three grains, and only administering the last three doses on alternate days. The attack commenced on the fifth of the month, and the coachman thought the previous attack was about a similar date. By way of anticipating a return of the disease on the fifth of next month, I advised the administration of arsenic in three grain doses to be commenced on the first and to be continued till the tenth. This was done and no return of the ophthalmia occurred.

The horse remained under my care untill the middle of August, and received daily doses of arsenic on the first ten days of each month. The coachman took away with him twelve powders, each containing three grains of the drug. These he administered in September. In October he had no arsenic, and thought that it was not worth while getting any. No attack occurred. On November 4th both eyes were again affected and never quite cleared up, so the horse was sold and lost sight of.

I incline to believe the arsenic really prevented the periodic return of the disease, and account for no attack recurring in October by supposing that possibly sufficient arsenic remained in the system to exert its mysterious prophylactic action. I have not been able to repeat the experiment, and I know of no similar experience. Possibly some practitioner may be able to supply further data.—*Ibid.*

PUNCTURE OF THE ABDOMINAL CAVITY, WITH PROTRUSION OF THE OMENTUM.

By. T BOWHILL, F.R.C.V.S., Darlington.

The subject of this case was a two-year old filly, injured in a railway accident at Melrose, near Oakland, California, U.S.A. A splinter of wood from one of the broken horse-boxes pierced the off-side of the filly's chest, about four inches anterior to the line of the diaphragm; passing backward, it penetrated the abdominal cavity in the hepatic region, midway between the vertebræ and the sternum. When I first

saw the filly, about ten hours after the accident, the splinter of wood was withdrawn, and about twelve inches of omentum were hanging from the orifice of the wound, over which a yellow-colored serosity was trickling.

To return the protruded omentum would have caused peritonitis, owing to it being partially strangulated; so it was decided to amputate it. The filly was cast on her near side, a probe-pointed bistoury was introduced, and the punctured wound slit open to where it abruptly passed inward; after cleansing, examination of the parts showed it was impossible to return the omentum after amputation of the diseased part; on account of the wound being between two ribs, and circular, no means of closure was left. Slight traction was now applied to the protruded omentum, and about two inches more were withdrawn. The orifice of the wound was then thoroughly cleansed, the omentum stitched to the muscular tissue between the ribs with catgut sutures, and the diseased omentum amputated as close to the sutures as possible, and dressed with a powder consisting of equal parts of bismuth sub-iodide and boracic acid. The lips of the external wound were brought together with strong sutures, an opening for drainage being left at the most depending part. The hobbles were now removed, and the filly allowed to get up, when a pledget of antiseptic tow was placed over the wound, and the whole covered with a broad calico bandage in the shape of a surcingle. The filly was placed on laxative diet, with the addition of tonic powders, and the wound dressed daily with a solution of soluble phenyl, and a little of the above-mentioned powder blown in with a powder-blower. No untoward circumstances arose to retard recovery, except an attack of influenza when the external wound was almost closed, the coughing causing some of the sutures to give way. A firm pledget of tow was applied, and the calico bandage adjusted tight enough not to interfere with respiration, and the wound dressed daily as before. No further complications occurred, and two months from the date of the accident the filly was shipped to Central America.—*Veterin. Journal.*

THE BACTERIOLOGY OF GLANDERS.

From a careful study of this subject Dr. Finger, of Vienna, has arrived at the following conclusions: Successive local injections of the bacilli of glanders into animals susceptible to the poison produce with each injection symptoms of gradually diminishing virulence—that is to say, the first injection only produces the typical nodules, the later ones causing an abortive type of the disease. 2. The constitutional symptoms of glanders after intravenous injection of virulent cultures produces an incomplete local immunity, and an abortive course after subsequent local injections. 3. Intravenous injection of virulent cultures quickly causes death in some animals—sometimes in a few hours; in such cases post-mortem examinations fail to discover any local manifestation of the disease. 4. Intravenous injection of a sterilized culture of the bacilli of glanders produces in rabbits an immunity against the infection from pure cultures which lasts from three to six weeks. Local manifestations, however, occasionally appear, these being of an incomplete nature and not followed by any constitutional symptoms. At the end of the above-named period, however, the injections are followed by a typical and rapidly fatal disease. 5. Rabbits which have survived an ordinary attack of the disease enjoy afterward complete immunity. Repeated local injections simply produce a transitory local affection, constitutional symptoms never following. 6. This immunity does not appear to be able to be transferred to the offspring—that is to say, does not become hereditary. 7. The injection of sterilized cultures of the bacilli or of their chemical products produces poisonous effects, generally mild in character, but sometimes so severe as to kill the animal. Post-mortem examination reveals the same lesions as are seen in the primary disease, localized mainly in the portal system. 8. Injections of sterilized cultures produce an immunity, though not always complete, against intravenous injection of virulent cultures. 9. If sterilized and virulent cultures are injected at the same time, the disease produced is exceedingly rapid and fatal. 10. The bacilli when introduced into the

tissues of susceptible animals exhibit great activity, multiplying rapidly, growing into long threads, and apparently defying the action of the phagocytes. 11. In the tissue of non-susceptible animals, such as white mice, the bacilli show no signs of activity; they rapidly die and disappear. There seems, however, to be no intervention of leucocytes. 12. In rabbits which have been rendered artificially proof against poison the bacilli seem to take longer in disappearing. There is rapid collection of leucocytes, with some exudation. 13. The rapid death of the bacilli in the white mice is probably to be referred to an active power of destruction possessed by the organism. 14. The slower disappearance in other animals is to be referred to the action of the leucocytes, which appear to play a special *role*, as described by Metschnikoff under the term of phagocytosis. But, in addition to this, Dr. Finger considers that the fluid of the tissues themselves plays a prominent part in the destruction of the microbes.—*Wiener Medicinische Wochenschrift*.

BIBLIOGRAPHY.

HANDBOOK OF MATERIA MEDICA, PHARMACY AND THERAPEUTICS.—BY SAMUEL O. L. POTTER, A.M., M.D., M.R.C.P.L. (Blakiston, Low & Co.) Third Edition.

A poor book, especially if it be on a scientific subject, is not apt to reach a third edition. (In light literature it is different. That is manufactured for the amusement of people, and its readers can usually bear a good deal of amusing. Most readers of merely entertaining literature are in the passive mood, and are mere receivers, and it is easy to receive. But to read a scientific book, as it ought to be read, is to *study*, and *studying is labor*. And who loves labor?) The two words "third edition," therefor, imply much—they imply the value of the work. They never could find a place, truthfully, on the title page of an inferior scientific work. The title of Dr. Potter's ably written book defines its character. It is a com-

pend of the various branches of *materia medica* and therapeutics, collected and arranged in subdivisions which treat severally of the associated topics, under an arrangement and in a manner which facilitates the study of the whole, while it sufficiently particularizes and accents the distinctive features of each department. The physiological action of drugs, the special therapeutics of disease, officinal and practical pharmacy, and directions for prescription-writing, are systematically treated in a manner which cannot fail to make an accomplished pharmacopolist of any one willing to study and capable of assimilating knowledge.

Some generalities pertaining to the subjects of *materia medica*, pharmacy, therapeutics, and the administration of medicine, are followed by a classified arrangement of drugs, in alphabetical order, considered with reference to their effects upon the several organs, regions and apparatus of the body.

This is comprised in Part I., and is followed, again, in Part II. by a treatise on pharmacy and the art of prescription-writing.

In Part III., under the head of special therapeutics, we have a presentation of the subject of the general indications of drugs in special diseases, and this is enriched with a collection of prescriptions—perhaps the most valuable portion of the book. In reference to this it may be said that no pharmacist, and certainly no practitioner, can go amiss in hoarding prescriptions of a tested and practical character. They are actual wealth to a man in busy practice, and may save him from many an anxious cogitation. No man can always remember.

An Appendix is added, in which sundry other matters are treated which do not exactly “fit” the body of the book.

This hand-book forms a neat volume of some 700 pages, well printed, with a good solid binding, and cannot but be a valuable addition to the library of the practitioner of medicine and the student of therapeutics, whether in human medicine or in the veterinarian ranks.

PRECIS DE THERAPEUTIQUE, MATIERE, MEDICALE ET PHARMACIE VETERINAIRES. (Treatise on Veterinary Therapeutics, Materia Medica and Pharmacy.) BY PAUL CAGNY. (J. B. Bailliere & Fils : Paris.

We thank our friend Cagny, and avail ourselves of the columns of the REVIEW to return him our compliments for his courtesy in favoring us with an opportunity of examining this excellent little work. Its fine literary execution, the judicious arrangement of its contents, and the specially interesting facts which he has collected, must combine to render it not merely a valued acquisition to the library of the veterinarian, but well nigh an indispensable necessity in his daily practice.

The work treats, under four heads, of general therapeutics, veterinary materia medica, with special therapeutics and the same applied, with also the effects of drugs, and their special action. The subject of the antiseptic philosophy, including the questions both of asepsy and antisepsy are carefully reviewed, and the principles and their application of this important discovery or development in scientific surgery receive special attention from the author and are adjudicated with the intelligent authority befitting his many years of personal cognizance of the matter.

A number of engraved illustrations add value to the book. Readers of French will find great interest and profit in consulting this work of Mr. Cagny.

FORMULAIRE VETERINAIRE, (Veterinary Compendium,) BY BOUCHARDET AND VIGNARDON : (Felix Alcan, Paris).

This is another of what may be denominated at once the source and the product of veterinary progress, though this particular volume is not one of the freshly original kind, being the fourth edition of a work which must necessarily be of established value to demand so frequent a reissue.

It forms a magazine of ammunition for veterinarians, being a copious collection of prescriptions and directions for pharmaceutical preparations. There is nothing like it in the English language, unless we include the Vade Mecum of Gamgee, published some years ago, but now out of print.

We think it would scarcely be running a risk if some enterprising medical publisher would consult the interests of veterinarians by putting into their hands a good translation of this work of Bouchardat & Vignardon. It would soon be ascertained whether there is room for such a help to practice among the veterinarians of America. We have little doubt of the success of such a venture.

SOCIETY MEETINGS.

KANSAS VETERINARY MEDICAL ASSOCIATION.

The meeting was called to order by President Pritchard at "The Copeland."

Minutes of previous meeting read and approved. Officers for the ensuing year were elected, as follows: President, Dr. Geo. C. Pritchard, Topeka; Vice-President, Dr. S. L. Hunter, of Fort Leavenworth; Treasurer, Dr. W. H. Richards, of Emporia; Secretary, Dr. N. S. Mayo, of Manhattan; Board of Censors, Drs. J. M. Phillips, of Wichita, D. LeMoy, of Fort Riley, and L. R. Brady, of Manhattan.

The resignation of Dr. Orr was laid upon the table until the next meeting. Drs. Hunter, Richards and Brady gave notice that a request would be made at the next meeting for a change of Sec. iv. of the Code of Ethics.

A paper on "Bursattee" was presented by Dr. S. E. Phillips, which was very interesting and was thoroughly discussed. The subjects of bovine tuberculosis, hernia and enzootic cerebritis were brought up and discussed, and cases reported.

Drs. Orr, Brady and Mayo extended an invitation to the Association to hold the next meeting in Manhattan. The invitation was accepted, and it was decided to make the meeting there the "banner" meeting of the Association both in point of numbers and interest. The society then adjourned to meet in Manhattan the second Thursday in March, 1892.

N. S. MAYO, *Secretary*.

NEBRASKA VETERINARY MEDICAL ASSOCIATION.

At the annual meeting of the Nebraska Veterinary Medical Association, held at the Hotel Mock, North Tenth Street, Lincoln, Neb., on September 9th, 1891, the following veterinarians were present: V. Schaefer, A. T. Everett, Wm. M. Taylor, E. A. Noble, G. J. Robertson, A. Sanson, R. Lord, J. Wilson, W. A. Thomas and A. E. Cosford.

The minutes of the March meeting were read and approved. Drs. A. Sanson, V. Schaefer and G. J. Robertson were elected members of the Association, after which the election of officers took place with the following result: President, E. A. Noble; Vice-President, H. L. Rammaciotti; Secretary, R. Lord; Assistant Secretary, A. E. Cosford; Treasurer, G. R. Young; Board of Censors, Drs. Sanson, Lord and Cosford. A. T. Everett, of Hastings, read a paper on the use of cocaine in gastritis, which brought out a lively discussion, after which the meeting adjourned.

R. LORD, *Secretary*.

per A. E. COSFORD, *Assistant Secretary*.

AMERICAN HEALTH ASSOCIATION.

The nineteenth annual meeting will be held at Kansas City, October 20th to 24th, 1891. The Local Committee of Arrangements announces that all the railway passenger Associations of the country have granted a one and one-third fare rate for the round trip on the usual certificate plan, that is:—

1.—Procure a certificate of attendance from the agent at the starting point by paying full fare to Kansas City.

2.—Have the certificate of attendance signed by the proper officer of the Association at Kansas City. This certificate will then procure return ticket for one-third fare. All the leading hotels of Kansas City will give special rates to delegates. Arrangements are being perfected for an excursion into Kansas, as one of the features of the entertainment of the Association. For any information as to the meeting, address

DR. E. R. LEWIS, *Chairman*,

DR. JOSEPH SHARP, *Secretary*,

Local Committee of Arrangements, Kansas City, Mo.

OBITUARY.

DR. V. T. ATKINSON, V.S.

The veterinary profession has sustained a serious loss in the death at Englewood, Ill., of Dr. V. T. Atkinson on Sept. 24. He graduated from the Ontario Veterinary College in 1875, and was located for a number of years in Milwaukee, Wis. He filled with great credit to himself and our profession the position of State Veterinarian of Wisconsin, and Professor of Veterinary Science in the University of Wisconsin for several years, and was probably better and more favorably known to the profession in general than any other veterinarian in his State. A few months since he resigned his position in Wisconsin and removed to Chicago to accept the chief inspectorship of export cattle under the U. S. Bureau of Animal Industry, but the increasing ravages of Bright's disease, from which he had suffered for some time, soon forced him to relinquish his work. Dr. Atkinson was an affable, courteous gentleman of the highest class, a careful, conscientious and earnest veterinarian, whose ability was never doubted by those who knew him. The news of his death will bring regret to his many friends.

ECHOES OF THE CONVENTION.

The West was not so largely represented as it should have been.

The leading advocates in the roll of schools, that yearn for a broader and stronger curriculum in all the veterinary colleges of this country, and strongly deplore the short sessions in some schools, were conspicuous by their absence. Surely this subject should command their attendance and warrant their advocacy.

That the convention of 1892 will require not less than three days sessions.

That our greatest loss was in the lack of time to give

proper consideration in discussions to the excellent papers and reports.

That our standing committees deserve our sincere appreciation for the excellence of their output this year.

That the Bureau of Animal Industry seemed to be the friendly target of all chairmen and some essayists.

That the death of the committee on a central legalized body will be a great relief and cessation of strain from the burdened minds of its members.

That the special college committee had outlived its usefulness, and henceforth the Association will assume general mastery of the situation.

That our Brooklyn friend was visibly affected by the death of so many of his proteges.

That our Association is a body of workers, not of names. The last dead wood has been washed away.

That the exercising greater vigilance in the new membership list will result advantageously.

That the local reception committee surely treated us to a generous indulgence of warm-hearted hospitality. It will bear good fruit.

It proved that the Association's interests are greater than the wishes and desires of any one of its members. Hence the demand for re-election of the former Secretary.

That we convened promptly at 10.30 A.M. the first day.

That the session of the Comitia Minora was well timed on the evening of the 14th, and should be the precedent in all future gatherings.

That the absence of one or two familiar faces was deeply regretted, and their active interest greatly missed.

That the re-election of our faithful Treasurer was a strong indorsement of true civil service.

Where will we meet in 1892? Have you any suggestions?

N. N. S.

CORRESPONDENCE.

ADMISSION TO MEMBERSHIP IN THE U. S. V. M. A.

WATERTOWN, SO. DAK., Oct. 14th, 1891.

Editor American Vet. Review:

SIR: Though not a member of the American Veterinary Medical Association, I wish to say a few words in regard to "the desirable requirements for admission to membership." All progressive veterinarians should certainly take a deep interest in this question of higher education, referred to (editorially) in the October issue of the REVIEW. It must be admitted, on all hands, that it would be a grand thing for the profession if all veterinary schools were to unite in this matter, and have rules laid down for the matriculation course of study and final examination of all future members of the profession. I have watched with deep interest the doings of the U. S. Veterinary Medical Association for some years, and many of us in the far west hail with pleasure the seemingly hearty discussion of this subject at the last meeting, after the action of the 1890 session which admitted members regardless of what course of study they went through, or whether they were taught by one, four, or one dozen teachers. For instance, I have known many graduates from a certain class of schools, who were well educated gentlemen in English and mathematics, but very deficient in the theory and practice of veterinary medicine and surgery, yet they set themselves up as veterinary surgeons. Just imagine a member of the United States Veterinary Medical Association quarantining a fine stallion for ninety days as being affected with syphilis, when the penis was chafed a little from some outward cause, or of being called to examine a valuable horse, pronouncing the animal as being just a little out of sorts, but that in the course of a week would be all right and in the stud again, but alas! the horse was dead in a few hours after.

On being called to examine a large flock of sheep where some of the flock were thin and sickly, through bad care

and feeding, while at the same time they were the bearers of *tænia cœnurus* and *estrusavis*, pronounced the trouble the grip. So the sheep died of the grip.

I say that when we find such men members of the United States Veterinary Medical Association, it is high time that steps be taken to bring about a better system of education, or, at least, refuse such men admission to the United States Veterinary Medical Association. Lasting good will result to the veterinary profession of the U. S. if the Association can only be the means of bringing all the recognized veterinary schools to an agreement on this vital question. And if there are schools, or veterinery departments of agricultural colleges, now recognized by the Association, these also should be brought up to the required standard, or at once dropped from the list of competent schools, to teach the principles and practice of veterinary medicine and surgery.

Very respectfully,

D. A. CORMACK, D.V.S.

CORRECTION.

TREVOSE, PA., Oct, 9, 1891.

Dear Doctor Liautard: I notice a slight error on page 385. "The sinews were healthy" should be "the sinuses were healthy," that is the nasal sinuses. As the question of foetid breath was not fully made out, some might think the foetor was from the sinuses.

Very truly yours,

W. H. RIDGE.

SANITARY BULLETIN.

GLANDERS IN MINNESOTA.*

The following are extracted from the report of the Secretary of the State Board of Health:

*It would be of great advantage if State veterinarians could supply us with similar statements; international sanitary science would gain much by it, and the condition of our live-stock abroad would be then better appreciated.—EDIT.

Total number killed, - - - - -	130
Total number released, - - - - -	45
Total number died, - - - - -	2
Total number remain unaccounted for, - - - - -	16

SUMMARY FOR 1890.

January-December.

Total number suspected horses isolated, - - - - -	98
Total number of horses killed, - - - - -	56
Total number of animals released, - - - - -	32
Total number remaining unaccounted for, - - - - -	10

SUMMARY FOR 1890.

January-December.

Total number suspected horses isolated, - - - - -	80
Total number of horses killed, - - - - -	66
Total number of horses died, - - - - -	2
Total number of animals released, - - - - -	6
Total number of horses remaining unaccounted for, - - - - -	6

The following are obtained from the bulletin for June, July and August, 1891, published by said Board:

	JUNE 1,	JULY 1.	AUGUST 1.
Cases of glanders remaining isolated			
or not accounted for, - - - - -	18	37	51
Reported during the month, - - - - -	27	37	6
Killed " " " - - - - -	7	21	4
Died " " " - - - - -	1	0	0
Released " " " - - - - -	0	2	0
Remaining isolated or not accounted			
for, - - - - -	*37	*51	*53

* Most of these are cases exposed to possible infection, and isolated for further observation.

CENSUS OF FARM ANIMALS.

From statistics received from the Census Bulletin in Washington dated August 19, 1891, it is shown that in the States and Territories there were on hand June 1, 1890, 14,976,017 horses, 2,246,936 mules and 49,109 asses; that in 1889 there were foaled 1,814,404 horses, 157,105 mules, and 7,957 asses; that there were sold in the same year 1,309,557 horses, 329,995 mules, and 7,271 asses, and that there died from all causes 765,211 horses, mules and asses during the same period.

The increase of horses from 1880 to 1890 is shown to be 44.59 per cent., as against 44.95 per cent. between 1870 and 1880, and 14.34 per cent. between 1850 and 1870. The increase of mules from 1880 to 1890 was 26.66 per cent.; between 1870 and 1880 the increase was 61.08 per cent., while from 1860 to 1870 there was a decrease of 2.24 per cent.

Of the aggregate number of horses and mules in the whole country June 1, 1890, 86.95 per cent. were horses and 13.05 per cent. were mules. The North Atlantic group of States had the smallest proportion of mules, 2.41 per cent., while the South Atlantic group had the largest proportion, 32.04 per cent., as against 67.96 per cent. of horses.

POSITION WANTED.

Wanted, by a graduate, a situation as assistant. Will be willing to stay one or two years.

For further information, address

SABISTON & MURRAY,

916 Sixth Ave., New York.

AMERICAN VETERINARY REVIEW,

DECEMBER, 1891.

EDITORIAL.

SHALL IT BE UNION OR DIVISION IN OUR RANKS.—At the twenty-sixth annual meeting of the United States Veterinary Medical Association, held September 17th, 1889, a resolution, offered by Dr. C. P. Lyman, was adopted, for the “establishment of a central legalized body of veterinarians;” and the matter was referred to a special committee of three of the best working members of the Association. At the last meeting, held in Washington City, this committee was discharged. Had they failed in their efforts to bring the matter to a satisfactory issue? Had they exhausted themselves in vainly endeavoring to devise measures for the promotion of the objects contemplated by the resolution of Dr. Lyman? We do not know, and therefore cannot state, for since their appointment nothing has been heard from the committee, except that they have held one meeting; but with what result is, we believe, as yet unknown to all but those who were present. We regret the discharge of the committee, for we believe that the object of the resolution has been misunderstood or disregarded. We have perhaps no right, and possibly no sufficient data by which to construe the motive or interpret the purpose of Dr. Lyman in the matter, but after giving the subject much thought and consideration, we have adopted the conclusion that the purpose of the proposed measure was the establishment of a policy of consolidation and a union of sentiment throughout the membership of

the veterinary profession—a bond of consolidation, a union in the execution of the various departments of labor in which every veterinarian is engaged, whatever it may be, whether his daily practical work, or that of teaching. Our humble apologies are tendered to the Doctor if we have wrongly interpreted his thought, but in any case, we alone are in fault. The responsibility is ours alone, and he must not call others to account for our errors, if it is indeed an error.

Consolidation and union for veterinarians, as for all others, means strength, and springing from a central national organization, extending its influence over the entire country, and by its force elevating the standing of our profession by urging forward the movement for the requirement of a better obligatory education, and, as a consequence, elevating our standard and influence, and our usefulness in the general domain of science—was this Dr. Lyman's object? That the committee has failed to incubate, or has incubated without producing any results bearing upon this important subject, we sincerely regret, but our greatest regret is, that they should have consented to be discharged without announcing the nature of their deliberations, with the reason why they proved so wholly abortive. We cannot overcome the impression that if they had met with even a moderate degree of success, it would have been greatly to the advantage of our guild, both now and for those who will come after us.

At the last meeting of the Association in Washington, one of the most valuable members of that body brought forward another and kindred (?) proposition, embodied in a motion to the effect that "at an early period no candidate shall be admitted to membership unless he be a graduate of a school which has a three years' curriculum, in terms of six months, and at least four veterinarians among its faculty." This would be a most excellent measure, and one which we feel confident has been submitted with the best of intentions, and also with the noble design of elevating our professional standards.

But is the plan a practicable one? Is the execution of the resolution possible? Yes, will be the reply. The Associ-

ation has a right to establish rules for its own guidance, and that is a good one, as no doubt it will raise the standard of its members. But it is also to be considered that if it is the intention to strike at the schools which have only a two years curriculum, and one or more (even four) veterinarians in their faculty, these institutions have a similar right to establish rules for their own guidance, and will not the consequence naturally follow that when they find themselves thus excluded from the Association, they will on their part forthwith turn their backs upon the body which ignores them? How many veterinary schools in the United States have a three years' curriculum? How many actually have four veterinarians in their faculty? How will it be known whether a graduate has attended the three six months' terms of study? How will it be established that the professional education acquired in a three years' school is better than in that of a two year institution?

And the queries might be largely multiplied and a variety of answers given without getting at the final and satisfactory solution of the matter. If we are not mistaken, this second resolution is directly antagonistic to that of Dr. Lyman. Then if one means consolidation and union, what can be the spirit of the other if it be not division and discord?

BORROWED FEATHERS — HOW TO PLUCK THEM. — Scarcely a week passes, when either in our capacity of Editor of the REVIEW, or as dean of one of our colleges, we are not requested to pronounce upon the qualifications of some unknown man, and as to his right to the title he assumes as a member of the veterinary profession.

Sometimes we are approached through anonymous letters, and at others interviewed personally, and it rarely occurs that we are able to do justice to the truth and at the same time, answer the applicant satisfactorily. It is a remarkable fact, however, how often the assumption of the same title recurs. Our correspondents and interviewers not only flourish an imposing (no joke intended) array of familiar initials, every man being a V. S., or a D. V. S., or a D. V. M., according to which selection from the alphabet appears to his ears most euphonious, but often claims to have been

graduated from one or more of our most eminent and best reputed schools. We are not sure of the exact number of cards sent to us inscribed with the name of parties calling themselves graduates of the American Veterinary College, but they are very many.

Now, to simplify the work of answering all these letters, communications and solicitations, we will remark that every school publishes yearly a revised list of its *own* and *regular* graduates, and that such a list is authentic and *official*, and that consequently, the name of every man who claims to have been graduated by any designated school, if his claim is a true one, will be contained in that list. If it is not, he is an *impostor*; that is the long and short of it, and he is liable to legal prosecution.

But that is not the only kind of feather likely to be borrowed. These are easily identified, and plucked, leaving the bird cold and featherless, ready for singeing, and merely covered by his own confusion. But there are other persons who, without being anxious to be known as graduates of a school, assume the general title of veterinarian, merely.

To this, we suppose that in this country no one ought to object. In this land of liberty a man may clothe himself with all the titles he fancies, and if he is allowed to go at large wearing the plumage of a general, colonel, captain, honorable, doctor, judge, professor, and so on to the end, if there is truly any end to the catalogue of pseudo notables—we do not say *not ables*—why should the title of veterinarian be held too sacred to go on the list among other prenominal handles? All the feathers, we fear, will never be plucked off.

Our friends in Western Iowa, however, have, somehow, imbibed peculiar notions on this subject, which are forcibly and practically expressed in a bill which is about to be introduced in the Legislature of that State, and which, if enacted into a law, cannot but tend to cause discomfort and discomposure in the minds of a number of individuals. The aim of this projected measure is to prevent the false assumption of the title of *veterinarian* or any *analagous* designation, by

making it a misdemeanor, punishable by fine or imprisonment, or both.

We learn by a letter before us that there are eighty-two veterinary graduates in Iowa, and that it is through the action of the Iowa State Veterinary Medical Association that the appeal to the Legislature is to be made to pass the law. Now, how will this measure operate, if consummated? Will it elevate the profession; will it tend to prevent quackery; would it be a long stride in the right direction? These are the questions to be confronted. *Our* answer will certainly be that this, or a measure of this character, cannot be otherwise than advantageous to the profession, and that it would certainly prevent a great deal of quackery, and for that reason, every effort ought to be made to carry it fully into effect. By all means, prevent, if possible, birds of carrion from imposing themselves upon the public as respectable fowls.

We think that legislative action, carried to this length, would unquestionably be just and beneficent, but beyond this it would be overstepping its province, and the power which might be asked to examine men about to compete for the right to practise in our ranks, before a board of examiners, ought not to be looked for. Nor would we acquiesce in the legislative action which would allow societies to grant diplomas or issue certificates to the alleged, "self-made," men who have ignored the existence of our veterinary schools, while they could have availed themselves of their advantages, for the last twenty-five years.

The generation of "self-made" men, which existed prior to the establishment of veterinary schools in this country, is pretty nearly extinct, and the generation of this last quarter of century has no longer the same excuse, and if veterinary practice is a remunerative occupation, and if the title of veterinarian is worth wearing, it is worth working and contending for.

We are far from confident of the success of our friends in Iowa, in obtaining the passage of this bill, but they, nevertheless, have our best wishes in their contest. But when it comes to the question of giving them the power to examine

candidates and to authorize them to call themselves veterinarians, we would suggest that instead of a board of examiners composed of the members of their own society, these candidates should be referred to the faculty of a veterinary college, to pass upon their competency and award to them the coveted privileges and distinctions.

ORIGINAL ARTICLES.

THE RELATION OF PARTURIENT ECLAMPSIA OF WOMAN TO PARTURIENT APOPLEXY OF THE COW.

BY W. L. WILLIAMS.

The identity or close analogy of parturient eclampsia of woman and parturient apoplexy of cows has long been confidently asserted by some observers and as stoutly denied by others, and so long as the etiology and pathology of both are in a decidedly unsettled state, this difference of view must continue. It is not material either that veterinarians should believe the two diseases identical except that it broadens our field for observation, renders data more reliable and furnishes the student with more material for use.

On page 194 of the current volume of the REVIEW, Dr. Tait Butler of the Mississippi Agricultural College takes occasion to criticise adversely a suggestion made by me in a paper on "Parturient Eclampsia in the Mare," that the two above affections are probably either identical or closely allied.

He first attempts to show that the premonitory symptoms of the two affections are wholly dissimilar and contradictory, and proceeds to quote from Lusk a train of phenomena seen in eclampsia almost wholly subjective, such as headache and loss of memory, which, he leaves us to infer, are not to be observed in the cow. As this class of symptoms cannot be traced in the cow, such argument is evidently irrelevant.

Other premonitory symptoms of eclampsia are noted as occurring in woman, which do not ordinarily happen in cattle, such as œdema of the face and legs, phenomena rarely seen in

cattle diseases of any kind, hence not likely to occur in this malady.

Pregnant women have quite frequently some œdema of the face, but it is not seen in pregnant cows, and so cannot be expected to be present in apoplexy.

Dr. Butler lays especial stress upon the supposition that the milk secretion is not diminished in the early stages of eclampsia in woman, whereas it is diminished or suspended in cows. To say that this loss of lacteal secretion is *not recorded* in woman is not saying that it continues unabated, and even if it is not suspended in woman we fail to see the application of his argument, owing to the manifestly great difference in the development of the mammary glands in the two classes of patients.

He also states that while amaurosis is a common premonitory symptom of eclampsia in woman, it has not been observed during the earlier stage of the disease in cows. He seems to have overlooked the fact that Fleming asserts that * “congestion of the brain appears to be present at the commencement,” which evidently includes an amaurotic condition of the eye, and the assertion of Franck† that amaurosis occurs early. Amaurosis has, in our clinical experience, been quite constant in the earlier stages.

For the sake of comparison he then cites the train of symptoms of eclampsia in woman as delineated by Carpentier, and gives essentially those seen in apoplexy of the cow, such as livid pallor of face (not distinguishable in cow for evident reasons), rolling of eyes in orbit, dilation of pupil, mouth drawn to left side (in cow head drawn to left side), spasmodic movement of jaws, laceration of tongue by teeth (cows do not lacerate tongue with teeth in any disease heretofore described), opisthotonos (always observed in cow in latero-recumbent position), etc.

We admit his proposition that *eclampsia* of woman is characterized mainly by *convulsions*, while *coma* is the most marked

*Veterinary Obstetrics, p. 645.

†Leburtshilfe S. 446.

in apoplexy of the cow. So indigestion produces coma in the cow and convulsions in children, but it remains indigestion. Dr. Butler has been extremely unfortunate in his observations regarding convulsions in apoplexy of cows, and is led to doubt the assertions of Fleming and Franck that they do occur, and seeks to have us believe that veterinarians who have reported convulsions do not know the difference between convulsions and delirium.

There are many careful observers who fully agree with Franck and Fleming. In several cases we have observed irreducible polapsus of the uterus in apoplexy of cows, and we can certainly attribute the violent and insurmountable expulsive efforts not to *delirium* but to *convulsions* only.

He next attempts to prove the non-identity of the two affections by reference to the pulse, which ranges from 100 to 140 beats per minute in eclampsia of woman, while he would have us believe it is *slow* and *weak* in apoplexy in the cow. He takes his figures from one in convulsions, the other in coma. In woman in convulsions there is an increase of pulse rate of 25 and 75 per cent.: while Franck* records that in apoplexy in cows running a convulsive course, the pulse rate is increased 100 to 110 per cent., and it must be admitted that to make the comparison relevant we must select analogous cases.

In comparing the urinary secretion, he concluded that in eclampsia it is suspended, in apoplexy abundant; but a careful perusal of his own statements shows that they are utterly contradictory, and that whereas it happens that the woman has urinated shortly before the attack and evacuated the bladder, the cow has failed to do so, hence the bladder is somewhat distended, and once the symptoms are established, the secretion of urine ceases, the empty bladder of the woman remains empty and the full bladder of the cow remains full—but *neither has marked additions to its contents during the disease*.

After admitting an elevation of temperature in the early stages of apoplexy in the cow, Dr. Butler again does violence

*Leburtshilfe S. 446

to his own assertions by remarking that "Veterinarians are equally unanimous that in cows with parturient apoplexy the temperature is lower than normal or at least that it is not elevated." To what veterinarians does he refer when he admits the opposite himself, and Fleming and Franck, respectively the highest English and German authors on veterinary obstetrics, distinctively state that there is an elevation of temperature in certain cases and in certain stages.

What more can be said of eclampsia in woman? Fleming and Franck aver that during convulsions in cows the temperature is elevated, during coma lowered. Human writers say that in parturient eclampsia there is elevation of temperature during *convulsions*, depression of body heat during *coma*.

Dr. Butler emphatically asks "*Will Dr. Williams please inform us of a single example of disease affecting women and cows, known to be due to the same causes and possessing similiar pathological lesions, where this difference in temperature is admitted?*"

Certainly.

Take acute indigestion, it may cause convulsion in puppies, delirium in the horse, coma and depression of the body temperature in the cow, headache and fever in woman, all due to ingestion of food of improper quality or quantity, or at improper times.

In asking this emphatic question, as well as in his discussion of the question of temperature generally, Dr. Butler has wholly ignored the generally accepted theories of body heat, founded upon physiological research and clinical observation. We admit that eclampsia of woman is characterized mainly by *convulsions* and parturient apoplexy of cows by *coma*, but eclampsia produces *coma* in some stages, and in cow apoplexy *convulsions*, as we have shown above.

We have also shown, by the best attainable authority, including Dr. Butler, that during *convulsions* in cow apoplexy we have fever, and during *convulsions* of eclampsia we have fever. It is equally certain and rests upon undoubted authority that during *coma* in eclampsia of woman and apoplexy of cow we have a lowering of body temperature. Dr. Butler insists, however, that the temperature of a woman in convul-

sions and that of a comatose cow should correspond, and by this mode of reasoning attempts to prove the non-identity of the two affections under consideration. Dr. Butler should, we think, bear in mind that body temperature depends largely upon two factors, the amount of heat generated within the body by means of tissue change, and the facility for the elimination of this heat when once formed.

That the nervous system exerts a far-reaching influence over both these processes has been fully demonstrated by physiological experiment. In sleep (brain anæmia) we have a distinct depression of body temperature, and the same holds true in almost, if not all cases accompanied by coma. Evidently the lower temperature in coma must be referred to a suspension of the thermogenic functions of the nervous system, not alone in sleep, nor in hibernation, but more markedly in coma preceding death in freezing or from certain drugs (curare, alcohol), producing probably analogous states of the nervous system. In no disease or pathological state perhaps, have we a better example of this law than in parturient apoplexy of cows, and in it we see a highly economic provision of nature. It is estimated, and upon good grounds, that in most animals a large proportion of animal heat is given off by the skin, and clinical observation goes far to show that in disease in which, owing to exalted tissue change, there is an excessive production of heat, the skin plays if anything a more important role in the maintenance of the normal body temperature than in health. On an excessively hot day, so long as a man or a horse sweats freely all goes well, but once this ceases, sun-stroke is the result. In both cases the skin ceases to perform its normal action and animal heat accumulates.

In man coma supervenes rapidly as a rule, while in the horse, tetanus and delirium set in with equal promptness and frequency, and the result is a comparatively higher fatality in horse than in man, because probably with coma the production of heat largely ceases in the latter, while in the tetanus and delirium of the horse the thermogenic functions continue.

Again, in that disease which I ventured to describe as

parturient eclampsia in mares,* and which provoked Dr. Butler's criticism,† and which was characterized by intense tetanic convulsions, during which assuredly there was great tissue change and consequent heat production, we still observe no elevation of temperature, probably because of *extraordinary* perspiration, which certainly acted as a powerful refrigerant.

Owing to the rudimentary condition of the sweat glands of the cow no such abundant cutaneous refrigeration is possible in health or disease, but nature seems to guard this defect by a well marked disposition in this animal to coma, not alone in parturient apoplexy but in many bovine affections. So when parturient apoplexy has become established, in most cases coma rapidly comes on, heat-production (tissue change) ceases, all excretions become suspended and respiration and circulation are carried on at a minimum rate compatible with life—a condition analogous in many respects to profound sleep or hibernation—so that a cow may lie hovering between life and death for several days, yet when recovery takes place no evident loss in weight or condition has ensued.

It certainly seems that with the defective means possessed by the cow for prompt discharge of surplus body heat, coma serves a highly economic use, and that without this provision and with the existing condition of the skin we would be compelled to record a much higher temperature and fatality in parturient apoplexy.

In emphasizing his statement that in parturient apoplexy in cows the pulse is *slow*, in contradistinction to the *rapid* pulse in eclampsia of woman, he takes occasion to say, "My statement is, I am aware, antagonistic to the 'authorities,'" and proceeds to aver that the authorities are wrong. This conclusion is based upon his personal observation and that of a few friends—a very illogical basis, exhibiting marked incredulity toward his fellow veterinarians. Because Dr. Butler has not observed a quickened pulse in parturient apoplexy is not sufficient grounds for practically asserting that Fleming,

* Am. Vet. Review, December, 1890.

† Ibid, July, 1890.

Franck and others could not count a cow's pulse. What Dr. Butler *did not see* does not overthrow what others *saw*; his *negative* does not overthrow their *positive*.

Dr. Butler attempts to show that there is a wide disparity in age between women subject to eclampsia and cows subject to apoplexy, but quotes authorities to show that eclampsia in woman occurs most often between twenty and thirty years, while in cows it is generally admitted to occur most often between the fifth and tenth years—surely quite analogous ages.

He further draws attention to the fact that eclampsia occurs most often in primiparous women, parturient apoplexy never in primiparous cows, and scouts the idea that all cows become pregnant before maturity, and insists that it is the *primiparous* condition of women, not maturity, that predisposes, and says, "few will be so bold as to assert that all cows become pregnant before maturity." Very true, but we never knew one to become pregnant for the first time after maturity, as the butcher usually interfered, and if Dr. Butler will count the cases of primiparous adult cows within his observation we will venture to assert they will not reach high figures. Besides, the disease occurs in cows as young as three years, at which age they have rarely given birth to more than a second calf. In Dr. Butler's effort to draw a distinction between the highly developed milking powers of the cow predisposed to apoplexy and the lack of any mention of such development by writers on human medicine in women subject to eclampsia it would be well to bear in mind that the state of milk secretion is rarely spoken of by pathologists except in animals used for dairy purposes, unless it be in connection with diseases of the mammary glands; and besides, the duration of eclampsia in women is rarely sufficient to permit of accurate observations.

Dr. Butler's quotations* from Carpentier and Lusk, intended to show that difficult labor *causes* eclampsia in woman, appear to indicate rather that the disease is a *complication* rather than a *result* of the labor, and other excellent writers

* Am. Vet. Review, Vol. XV., p 250.

on human obstetrics* positively assert that eclampsia *causes* the labor—a condition not unknown in apoplexy in cows. And even the writer, only a few lines below, virtually admits that eclampsia in women *causes* parturition by asserting that the disease in pregnant women is followed by parturition in almost every case, and follows up this strong assertion by quoting Depaul as saying that not less than 93 per cent. of eclampsia cases in women occur prior to delivery, so that by his own reasoning surely difficult labor in women is *rarely* followed by eclampsia—a condition fully analogous to that observed in cows.

He then ventures to state that fully 99 per cent. of cases of apoplexy in the cow occur at from 12 to 48 hours after birth, and strongly intimates again that other veterinarians have erred in their diagnosis regarding the other possible one per cent. Again we would repeat that the positive evidence of reliable observers who record the disease *before* parturition cannot well be wholly destroyed by Dr. Butler's failure to see identical cases.

I never saw a case of cystic calculus in the horse, yet I believe it occurs. His figures above quoted (99 per cent. of cases between 12 and 48 hours after birth) also seem very strong in the absence of positive data to support it.

Franck† records 123 cases in which 22, or 18 per cent., occurred inside of 12 hours, and 30 cases, or 25 per cent., beyond Dr. Butler's maximum time, thus placing 43 per cent. of cases outside of the limits in which Dr. Butler would have 99 per cent. if not all, occur, and yet he fails to furnish data to uphold his position.

It is further attempted to show the non-identity between eclampsia of woman and cow apoplexy by the fact that the former predisposes to post partum hemorrhage, but this logic seems destroyed by the equally evident fact that post partum hemorrhage is common in woman and unknown (except from wounds) in the cow. ‡

* Vid. Barnes, System of Obstetrics.

† Franck's Leburtschilfe S. 451.

‡ Vic. Franck's Leburtschilfe S. 196.

It may be that Dr. Butler is correct in his assertion that the Traube-Rosenberg theory of eclampsia in woman is generally discarded by human writers of the present day, but from the limited amount of literature on the subject at hand it seems that they have not all discarded it nor do we see clearly upon what grounds he bases his statement. Admitting, however, his correctness in the matter of majority of adherents to a given theory, he is wholly in error in the assumption that this theory of brain œdema and consequential anæmia is wholly "borrowed" from human medicine and rests for its force upon such an origin. This theory has a goodly array of facts to stand upon, wholly independent of eclampsia of woman, and further study of this disease in cows is quite likely to yet throw some light upon the pathology of the former. The theory rests upon, 1st, The exalted blood pressure and hydræmia existent at period subject to attack; 2d, The class of animal in which this exaggeration would naturally be greatest; 3d, Semiology; 4th, The results of treatment based upon this theory; 5th, Pathological anatomy as revealed by autopsy.

We are by no means certain that the disease we ventured to describe as parturient eclampsia in the mare is identical with the disease so named in woman, nor with apoplexy of cows, nor that any two of the three are the same, but in the present state of our knowledge we do believe that the majority of facts is favorable to the identity of the three.

EXPERIMENTS WITH GLANDERS LYMPH.

Translated by R. MIDDLETON, A.M., D.V.S., Philadelphia, Pa.

The specific reactions obtained from injections of lymph, produced from cultures of tubercle bacilli, in phthisical individuals, has opened a new avenue to the ultimate eradication of infectious diseases, which promises to develop into a subject of colossal importance.

This principle, "tuberculin," discovered by Koch, has been applied in many cases, but only as a diagnostic adjunct. The

use of this agent upon animals afflicted with tuberculosis produces a series of phenomena which are absent in subjects free from tubercular taint.

Since diagnosis, by the common methods of auscultation and percussion is unreliable, especially so in the primary stage, it becomes of extraordinary importance to proceed with the development of the multitudinous characteristics of tuberculin, and to reduce its application to a definite science. Respecting the difficulty of *intra vitam* diagnosis, tuberculosis is not unlike equine malleus, especially so in the chronic cases of occult glanders which are continually being met in old horses. Old animals, which at post-mortem show indisputable lesions of glanders, have, throughout their lives, perhaps, never exhibited the slightest trace of symptoms referable to that disease, probably the only appearances of unthriftiness being the short, feeble cough and rough hair.

It is no wonder, therefore, that of the many cases of death occasioned by the presence of glanders in a stable, there have been healthy horses slaughtered, under suspicions of also harboring the disease; the protection and preservation of healthy animals becomes a very desirable accomplishment from a general economic point of view.

No remedy has remained untried which afforded the faintest hope of facilitating the detention and extirpation of glanders. Proposed methods are either too ceremonious or too untrustworthy to be of practical value; inoculation of animals more susceptible to malleus than the horse, application of poor culture to horses already afflicted, excision of the sub-maxillary glands, artificial production of fever and other methods have proven unsatisfactory. An agent, to be of use as an aid to diagnosis, must produce a *specific* action in affected animals only, and that in a comparatively short time. Such a medication would be analagous to "Tuberculinum Kochii," and may only be procured from the glanders bacillus.

Kalming and Hellmann have busied themselves searching such a product, and both have succeeded in securing an increase of temperature after injecting it.

The first mentioned of these two investigators is deceased,

the direct result of personal and accidental inoculation ; his experiments consequently remain incomplete.

I projected a number of similar investigations with lymph which I cultivated, and will rehearse my results in the following paragraphs :

The fact that the surface of the potato,—upon which the breeding of the bacillus was affected,—was at first green, later brown, and finally of a black color, leads me to suppose that this small organism generates a product which colors the soil upon which it grows and propagates. This must be at once a peculiar, and a specific material, since no other bacterial organism is able to cause a similar play of tints upon the potato section ; old and hard potato cultures of the malleus bacillus are a jet black color.

By pouring over this a liquid of equal parts of water and glycerine, and placing the latter in an apparatus maintaining a temperature of 95° F., it is possible to obtain an extract which, after being filtered several times, and sterilized by steam, possesses a characteristic odor, neutral or slightly acid reaction, a dark opaque yellow color and oily consistency. This extract contains the coloring matter of the bacillary colony, while the insoluble products of the organism remain upon the tuber.

An extract or concentration prepared in such a manner is called “ malleine ” after receiving a dilution of a few drops of corrosive sublimate solution. On April 16, I injected 0.2 ccm. into each of two guinea pigs ; one was healthy, the other had been infected with glanders on April 1. I also inoculated another pig on the latter date, but did not afterward inject malleine.

The sound subject never manifested any reaction referable to the inoculation, but it died a few days later of an acquired disease. Some time later I gave the affected pig another injection of 0.2 ccm. The abscesses in the inguinal region hereupon rapidly disappeared, but there developed a suppurative inflammation of the left eye. The animal is living to this day. The second animal infected by glanders, but not receiving the glanders lymph, developed abscesses in the inguina

region, inflammation of the carpal joints, and nasal discharge. Its condition continued to deteriorate from day to day, finally necessitating its death. The post-mortem revealed numerous subcutaneous abscesses, suppurative arthritis, and ulcers of the septum nares.

At the beginning of June, this year, another opportunity offered to test the malleine upon equidæ. On a certain farm in the district of C——, commencing in April, there were eleven horses; five of these, afflicted with glanders, were killed. We found, together with recent alterations of the mucous membrane and small nodules, also quite old caseous and calcified collections in the liver, lungs and spleen; many old cicatrices were visible throughout the respiratory track, so that we were justified in dating the origin of the disease over one year back. Shortly after this one of the surviving mares met her death from a wound, and was also discovered to be glanderous. This mare had, some time previous, given birth to a foal, which, together with the remaining five horses—not any of them having shown suspicious symptoms—was killed.

Through the kindness of the owner, I was given permission to institute some experiments, and arrived at the farm one day previous to the time set by the police authorities for their death.

I took one part of lymph, between three and four weeks old, and carefully sterilized; to this I added ten parts of a two per cent. carbolic solution, as a further means of killing any bacilli which might exist in the same. The horses used were:

No. 1. Brown gelding, four years old, medium well nourished, short cough, but otherwise apparently healthy.

No. 2. Sorrel mare, nine years old, medium well nourished, with short, sharp and raw cough.

No. 3. Sorrel mare, eight years old, medium well nourished, with weak cough.

No. 4. Sorrel mare, fifteen years old, lachrymation of left eye with excoriation of the skin inferior to same.

No. 5. Brown mare, one and one-quarter years old, well nourished, no external signs.

No. 6. Brown filly, fourteen days old.

In Nos. 1, 2, 3, and 4, I used 3 ccm. of the fluid, i. e. 0.3 ccm. of glanders lymph; on No. 5, 0.2 ccm. of lymph, and on No. 6, 0.1 ccm. of lymph; the injections were made hypodermically on the neck or shoulder by means of a sterilized syringe. The first puncture occurred at two o'clock P. M. and was followed at 9.30 P. M. by a second puncture of 0.5 ccm. malleine in Nos. 2, 3, and 4, and of 0.3 ccm. in Nos. 1, 5 and 6. The suffixed table shows variations of temperature and pulse rate: (See page 501.)

Soon after the inoculation there developed at the point of injection a sensitive, doughy and variable swelling of the cutis and subcutis in all animals excepting the sixth.

Considerable vacillation of temperature was induced, as will be seen from the table in Nos. 1, 2, 3, 4 and 5; this was most intense fifteen hours subsequent to the first and eight hours to the second injection. In No. 1 the temperature advanced from 101° F. to 104° F.; in No. 3 the increase amounted to 3.96° F., and in the others from 2.5° F. to 3.4° F. In No. 6 a slight increase of 0.9° F. occurred seven hours after the first injection; but not only did it not rise after the second injection, but it actually fell to 100° F. While the five horses were weak and apathetic on the 11th of June, the foal experienced neither of these two states; the appetite of all six horses remained unaffected after the inoculations. Nos. 1 and 4 exhibited nasal discharges; the former of mucoid nature and from the left nostril—the latter watery and bilateral. The animals were destroyed at 10 A.M. June 11th; glanderous changes were present in Nos. 1, 2, 3, 4 and 5, while in No. 6 no alterations, either nodular or ulcerous, were apparent. The most considerable pathological lesions were found in Nos. 2 and 3; these consisted of fresh red granules and old caseous and calcareous nodules, together with a chronic pneumonia with numerous cicatrices in the trachea and larynx. In Nos. 1, 4 and 5 the pulmonary lesions were more circumscribed, but otherwise the same. Imme-

	1.	2.	3.	4.	5.	6.
June 10, 2 P.M.....	0.3 ccm.	0.3 ccm.	0.3 ccm.	0.3 ccm.	0.2 ccm.	0.1 ccm.
First Injection.....	101.1° F.	100.9° F.	100.7° F.	100.7° F.	100.7° F.	101.1° F.
5 P.M.....	100.9° F., p. 48	100.4° F., p. 44.	100.7° F., p. 54.	100.2° F., p. 50.	101.1° F., p. 44.	101.1° F.
7 P.M.....	100.7° F., p. 52.	100.9° F., p. 48.	101.6° F., p. 56.	100.9° F., p. 50.	101.1° F., p. 54.	101.8° F.
9 P.M.....	0.3 ccm.	0.5 ccm.	0.5 ccm.	0.5 ccm.	0.3 ccm.	0.3 ccm.
Second Injection..	100.4° F., p. 44.	100.9° F., p. 52.	101.8° F., p. 58.	100.9° F., p. 48.	102.9° F., p. 52.	102° F.
June 11, 5 A.M....	104.1° F., p. 60.	103.6° F., p. 54.	104.7° F., p. 64.	102.9° F., p. 56.	104.1° F., p. 48.	101.4° F.
7.30 A.M.....	104.7° F., p. 60.	103.2° F., p. 56.	103.8° F., p. 60.	103.4° F., p. 58.	102.9° F., p. 54.	101.1° F.
9.30 A.M.....	103.6° F., p. 60.	103.2° F., p. 48.	103.2° F., p. 60.	103.1° F., p. 56.	102.7° F., p. 48.	100.4° F.

diately adjacent to the old nodules in the lungs and liver of Nos. 2 and 3 we could discern a hyperæmic zone. On the 22d of June I inoculated a healthy, black mare, eighteen years old, with 0.3 ccm. of lymph prepared from glanderous horses. At the time of puncture the thermometer per rectum indicated 100.7° F., pulse 44.

		3 P.M.,	100.7° F.,	p. 40.
		6 "	100.4°,	p. 36.
		8 "	100.2°,	p. 40.
		9 "	101.1°,	p. 40.
Second inj. 0.5 ccm. lymph,	June 23,	9 A.M.,	101.1°,	p. 40.
	"	"	101.1°,	p. 36.
Third inj. 1 ccm. lymph,	June	10 A.M.	100.4°,	p. 36.
	"	1 P.M.,	100°,	p. 36.
	"	3 "	100.4°,	p. 36.
	"	7 "	100°,	p. 34.
	"	9 "	100°,	p. 34.
	June 24,	7 "	99.6°,	p. 34.

In this case, as in those mentioned, there also appeared a small sensitive and doughy swelling of the submucosa; otherwise the general health and deportment of the subject did not alter; its temperature varied only within the range of normal deviation, despite the administration of 1.8 ccm.; no glanderous lesions were found. At the beginning of February malleus appeared in a stable in "C."; at first only one horse was attacked, but on the 12th of March a second was killed affected with it. Toward the end of June another animal sickened of glanders; the same was a gray gelding eight years of age. The right submaxillary glands were swollen to the size of pigeon eggs, slightly sensitive and movable; alæ of the right nostril covered with amber crusts and accommodating a muco-purulent discharge; septum nasi reddened, and well inferior an indistinct ulcer the size of a bean. Subject otherwise healthy, moderately cheerful and a rough, unkempt coat. On this undoubtedly glandered horse I inoculated 0.5 ccm. of malleine on the 30th of June, 8 P.M.; also diluted with ten parts of a 1 per cent. carbolic solution; temperature 100.7° F., pulse 36.

	June 30th,	10 P.M.,	100.7° F.,	p. 44.
	July 1st,	5 A.M.,	102.7° F.,	p. 44.
	"	7 "	103.4° F.,	p. 44.
Second inj.,	"	9 "	104.1° F.,	p. 44.
	"	11 "	104° F.,	p. 52.
	"	1 P.M.,	104° F.,	p. 60.
	"	2 "	104.1° F.,	p. 56.

By the table quod vide from nine to eleven hours after the first puncture the temperature advanced 1.9° F. to 2.7° F. and later to 104° F. The difference between the induced temperature and the original amounted to 3.4° F.; contemporaneous with which an acceleration of the pulse rate was recorded and an exceeding weakness. From the right nostril an abundant discharge of a purulent, thick nature, more so on the right side; the ulcer, which the day before was not distinctly visible, now became so, and the pale mucous secretion which covered it was replaced by a brown scab. The inter-maxillary glands of the right side increased in size, and those on the left side partook of the swelling and were much softened.

After death I found very numerous nodules in the lungs, mostly of recent formation and red; surrounding several recent dark nodules a diffuse red zone and small red dots and stripes were observed in the center of aged caseous collections; on the Schneiderian membrane some phagedenic ulcers. Transverse section of the maxillary gland disclosed numerous soft points.

To the stable in question there yet belong four horses, which up to this time have revealed no questionable symptoms, but which, to satisfy the sanitarians, must also be destroyed. One of these responded in a decided manner to injections.

It is very evident from the foregoing trials with the lymph that it is able to induce a reaction; in how far this working is specific remains to be determined. The results obtained encourage to further pursuit, which, preferably, should be made by other members of the profession.

APTITUDE FOR VETERINARY PRACTICE.

BY W. H. DALRYMPLE, M.R.C.V.S., Baton Rouge, La.

To the minds of many students of veterinary medicine and surgery, the zenith of perfect happiness and fortune is realized on the receipt of the longed-for, and in most instances, well-merited sheet of parchment, the "diploma," enabling them to practice the art and science; when "stewing" and "cramming" at text-books and lectures are past, and all that remains to ensure success is to sit down behind an elaborate sign-board, receive clients, and make entries. It is just at this particular period, however, in the experience of most veterinarians, that troublous times commence. Cases come under their notice that do not "fit in" exactly as they would desire they should with the "text," over which they have spent so many hours, and burnt so much of the midnight oil, and it is at this, the outset of their professional career, when practice becomes a reality, and their future depends entirely upon their own individual efforts, and in a great measure, on the success they have at the beginning, that they are called upon to draw largely on their store of the most valuable of all senses, "common sense."

Perhaps there are no cases met with in practice that afford more discouragement to a young practitioner, and baffle him more, than cases of lameness—and in fact this is not entirely confined to the beginner, because there are practitioners of many years standing who often have grave doubts in their own minds as to the correctness of their diagnosis in very ordinary cases. We have known such men, men of large ability, whose theoretical knowledge was very extensive, but whose failure lay in their total lack of general knowledge of animals in health, their habits, &c. Such failing we cannot, however, attribute to want of common sense, further than in not finding out earlier that they were more suited to some other work in life.

It seems to us, that to attain to any degree of success whatever as a veterinary practitioner, a man should "be

born in a manger," so to speak, have an innate love for animals, be brought up along with them, study their life and habits, get as perfect a knowledge as possible of them in health ; for it is only when we have this knowledge that we can observe the slightest deviation from the normal standard. When a young man enters college, armed with this preliminary, but most valuable knowledge, the work of the curriculum is more attractive and interesting, and when he graduates, the theoretical information of which he is possessed is applied more practically ; he goes about his patients more like a horseman than an old woman, which latter is very prejudicial to a practitioner, in the eyes of horsemen, and his treatment is usually more rational, which necessarily is common sense treatment.

On the other hand, we often have young men drifting into our ranks whose only incentive has been, probably, that some one whom they knew had made a success of it as a veterinarian, forgetting the fact that the successful man may have had the many primary advantages before mentioned. Of course there are many exceptions, but it very frequently happens that veterinarians, whose knowledge of animals is obtained absolutely from the use of the text-book, prove failures in every-day practice, and consequently cast disparagement on their profession.

Cases of lameness often crop up in practice which tax to the utmost a veterinarian's—shall we say ingenuity?—at all events, his powers of observation. In this connection, a short description of a case which came under our notice may not prove uninteresting.

Some five years ago we were visiting in Northamptonshire, England, right in the midst of one of the best fox-hunting centers there, and within easy riding distance of four of the finest packs of hounds. The animal to which our attention was called was a beautiful dark bay thoroughbred lady's huntress, probably seven or eight years old, and worth at least five hundred dollars. The groom informed us that the mare went short in the off-hind limb, which was most noticeable when leaving the stable under the saddle, and also at

times such as when first starting off after a lengthened "check" in the hunting-field, but the inequality in her gait disappeared as soon as she got "warmed up."

He also told us he had examined the limb thoroughly, paying careful attention to the hock, but he could find nothing whatever to account for the lameness. We then examined the limb, being somewhat suspicious of hock-lameness, viewed it from all points, passed our hand over it, made comparisons with the other, etc., and could not find the slightest irregularity to mar the symmetry of as fine a pair of limbs as ever supported a horse. Some other ground had to be explored to reveal the, so far, hidden cause. We had the blanket removed (the weather was cold and the mare closely clipped) and on "taking in" the off-side from head to tail, as it were, we observed on that side of the withers a large cicatrix, which, when recent, must have been a very ugly gall, and involved a good deal of subcutaneous tissue. It struck us at once we had found a clue. Remembering about the lameness when starting off, and also when asked to move after having cooled off a little, we turned the condition of affairs over in our mind thoroughly before finally giving our opinion. We said to the groom: "The mare is not lame from any pathological condition in the limb, but from the scar on the off-side of the withers." He looked at us in utter astonishment, thinking of our opinion, perhaps, more than he cared to give expression to, but he ventured to remark: "It's a long way off to cause the mare to go lame behind." We told him we would give him our reasons for such a far-fetched opinion, viz: When a portion of the weight of the lady and the saddle are brought to bear on the scar, which is tender and probably painful from the previous day's friction, the mare tries to save herself further pain by taking a shorter stride with the hind limb of that side. Were she to stride normally she would, through continuity of skin and muscular tissue, drag the part to some extent under the saddle, thereby cause more friction, and consequently more pain at every step. A few months after when in London, we received a communication from the groom to the effect that his master (an old

fox-hunting gentleman) and himself fully endorsed our opinion, as the mare only showed symptoms of lameness when under the saddle.

We do not relate this case on the plea of any individual merit, but simply to illustrate the fact that frequently we have to depend so greatly on our powers of observation, and go far a-field to reveal the true cause of not only lameness, but other ailments as well, that it necessarily follows the more knowledge of animals a man can acquire from his earliest beginning, who intends to follow veterinary medicine as a profession, the more success is likely to attend his efforts as a practitioner.

ELECTRICAL ACCIDENTS TO DOMESTIC ANIMALS.

BY JAMES A. WAUGH, V.S., Allegheny, Pa

(A Paper read before the Western Pennsylvania Medical Association.)

The application and utilization of electricity as a motor power for street railway coaches, and the use of cheap or badly constructed or defective arrangements in road-beds, prove sources of occasional serious accidental electrical injuries to horses that are driven over these car-tracks, and come in contact with rails which have become surcharged with an excess of electricity, due to a settling or sinking of the road-bed, and breaking of the underground wires, which cause breaks in the electric circuits.

Horses are often injured by attempting to cross from one set of tracks to another while cars are approaching in opposite directions, and especially when approaching river bridges. The horse happens to step with one fore and one hind foot, or both fore and hind feet at the same time, on the inside rails of the double tracks, and the metallic shoes on the horse's feet act as conductors, which transmit the electricity to the animal and causes it to rear or spring several feet up into the air, and then fall prostrate on the street; while other cases are shocked so severely that they fall prostrate and remain paralyzed. The character of the injury is in proportion to

the amount of electricity received, intensified by violent contact with the street. The shock may be so severe as to cause instant death, or only partial paralysis with almost complete prostration for a few hours, or several days, weeks, or months. The pulse is slow, feeble and irregular; nostrils dilated; respiration slow and laborious; temperature slightly elevated; pupils dilated or contracted, and the eyes presenting a peculiar and unnatural expression, while sometimes strabismus is present, and at other times the eyelids are paralyzed; perspiration rather free in the early stages; mastication and deglutition impaired, and some patients will require an hour or more to drink a pail of water. The head is sometimes held almost in a line with the neck, or twisted on one side with the eye pointing toward the ground; and one ear may be held erect, while the other is lopped and paralyzed. Locomotion is seriously impaired, and the animal stands with its feet wide apart as if trying to brace and steady itself, and when moved, the feet are raised only a short distance from the ground; sometimes the patient is unable to assume a standing position, while others walk and act somewhat like human beings affected with *locomotor ataxia*, and stagger from side to side, and, if hurried, fall down and turn somersaults in all directions. The animal appears much frightened and nervous, and there may be a well-marked quivering of a certain set of muscles for several days or weeks after the accident. The functions of the digestive and urinary organs are somewhat impaired in the early stages, but soon regain their normal condition. The nerve cells are seriously injured, and the functions of the nervous system are impaired, and sometimes permanently damaged. I have not yet had any opportunity for post-mortem examinations on this subject, but Dr. Jackson informed me that Dr. Jennings and himself had found well-marked congestion of the mesenteric glands in a horse that had been killed by an electric shock received on street car-tracks, and the same horse's heart was greatly hypertrophied, which probably accounts for the sudden death. Elevated wires are sometimes displaced and prove fatal to horses which come in contact with them.

Treatment consists in hypodermic injections of strychnia, atropine, digitaline, and administration of stimulants and nutritives, either in drenches or enemas. It is sometimes necessary to secure and confine the patient in slings for several weeks or months, but mild cases usually do nicely in comfortable boxstalls. Feed and water from high mangers. Tonics and alteratives are beneficial during convalescence, which is generally tardy and unsatisfactory. The owners usually desire post-mortem examinations on the remains of horses killed by electricity; while horses severely shocked and injured are generally treated for some time, in order that damages may be legally recovered from the traction company.

A few cases may be cited to illustrate the above remarks. I have had a case under treatment and observation for about four months, and it is not yet well enough to walk out of the stable. Although the company veterinarian diagnosed it as a simple case of pleurisy, which would be cured in a few days, two of the ablest veterinarians in the city were called in as evidence and confirmed my diagnosis—electric shock.

Dr. J. E. McNeil kindly showed me a horse which had been shocked about a year ago and was then driven three miles to the country; the patient suffered severely and was unable to control his actions, and it was found necessary to confine him in slings for a period of twenty-one weeks. This horse is not yet fit for any work.

I saw a large, heavy draft horse that was shocked early last winter, and the owner finally became discouraged, and gave the horse away to a farmer.

There is a great variety of mild forms of electrical injuries which appear to cause a reduced or increased function of certain sets of muscles of locomotion, especially the abductors, flexors, and extensors of the posterior extremities.

ON THE PREPARATION OF AN ANIMAL SUTURE.

BY G. A. JOHNSON, V.S., CARROL, IOWA.

(A Paper read before the Western Iowa Veterinary Medical Association)

It is a conceded fact that sutures made from animal tissue are preferable to those made of silk.

After some experiments with silk, cat gut, and other sutures, I conceived the idea of utilizing the tissues of the tendons of the horse for sutures. Taking one of the perforatus tendons from a mare that had died from a rupture of one of the iliac arteries, in trying to foal, I placed it in a strong corrosive sublimate solution for one week, then I separated the tendon into fine threads, which I twisted by rolling on a clean board with the hand, then with a sharp knife removed the rough points caused by broken fibres. After having thus dressed the threads I placed them in a bottle containing olive oil three parts and carbolic acid one part. The bottle was then tightly corked and set away for two weeks, then the sutures were placed in another bottle containing olive oil and tannic acid, one drachm of the acid to the ounce of oil. This bottle was tightly corked and allowed to stand for two weeks, when the sutures were ready for use.

The corrosive sublimate and carbolic acid thoroughly disinfect the sutures, and the tannic acid toughens them, and the olive oil keeps them soft and pliable.

It is very difficult to get the threads as smooth as the cat gut, and of late I have not attempted this, for when they are kept in the oil, they are so pliable that they can be used, conveniently, if they are a little rough.

Prepared as above delineated it takes four or five weeks for their absorption, in a closed cavity, or as buried sutures.

From five hundred to one thousand sutures can be made from one tendon, of varying size and lengths, up to sixteen to eighteen inches long.

It is easier to tease the threads out of dried tendons, but they are more readily absorbed.

These threads answer equally well for ligatures.

PILOCARPINE AS A PURGATIVE FOR THE HORSE.

BY THE SAME.

Pilocarpine hydrochlorate given hypodermically is a good hydragogue purgative for the horse; it is a mild systemic

stimulant, excites the activity of the glandular structures, especially the parotid glands and those of the intestinal tract, and stimulates peristole, thus causing the discharge of watery fæces.

Thus used it is especially valuable in cases of intestinal impaction, when the alvine excretions are liable to become hard and dry, and in cases where gastric distension has produced temporary intestinal paralysis.

When given hypodermically, in doses of one to three grains, it should produce a copious flow of saliva in three to five minutes, and an action of the bowels in twenty minutes to one hour, and if it does not the dose should be repeated.

In certain cases it may be well to combine eserine with the pilocarpine, yet much caution should be exercised in the use of this combination, and as eserine is a powerful sedative I have nearly discarded its use.

In comparison the two drugs are as follows:

PILOCARPINE.—General stimulant, increases the heart's action, mildly stimulates peristole, lowers temperature, produces watery fæces.

ESERINE.—Powerful sedative, decreases the heart's action, powerful peristaltic stimulant, increases temperature, does not alter the character of the fæces.

Thus it is seen that eserine is a much more powerful drug than pilocarpine, and will always produce more or less depression, consequently it should never be used when the action of the heart is weak, as is often the case in colic and indigestion.

While in pilocarpine we have a remedy that can be pushed, and in so doing we get the purgative action, and gain two points, i.e., an increased action of the heart and a lowering of the temperature. And by its sudorific action it lessens the tendency to congestion of the bowels.

Prof. Niles has demonstrated that eserine in doses of three grains will cause the discharge of watery fæces, while smaller doses do not alter the character of the fæces.

PATHOLOGICAL ANATOMY.

TUBERCULOSIS IN DOMESTICATED ANIMALS.

From the observations of European investigators it appears that *spontaneous* animal tuberculosis is not so rare amongst some of them as it has seemed to be. In the *Revue des Sciences Medicales* mention is made of a dog which had died from a natural attack of tuberculosis, in which the liver, kidneys and other abdominal organs were found filled with softish tumors having a sarcomatous appearance. The bacteriological examination and inoculation proved that the tumors were of a tuberculous nature, with numerous bacilli. This fact proves that it is an error to suppose that the organism of the dog possesses a peculiar serum which gives him immunity against tuberculosis.—*Revue des Sc. Medi.*

EXPERIMENTAL PATHOLOGY.

THE REGENERATION OF THE SUBSTANCE OF THE KIDNEY.

Experiments made by Kummell, of Germany, have proved that the removal of a portion of the kidneys, even to one-half of the organ, made in the longitudinal or transversal diameter, may be followed by the regeneration of the renal structure in about eight days. After the ablation of one-third of the organ three days only are necessary to restore it to its normal size. Microscopic examination shows that the new formation is not limited to the connective tissue alone, but involves also the parenchyma of the organs and the glomerule.—*Ibid.*

ANTHRAX IN FOWLS.

In ordinary circumstances fowls are refractory to anthrax. Their immunity is due to the phagocytory activity of the leucocytes. The bacillus of anthrax can grow and retain its virulency in the bodies of fowls, but its inoculation is followed by febrile reaction. There are conditions, however, in which fowls may become affected with anthrax and suc-

cumb to the attack. It is when they are deprived of the beneficial influence of leucocytes. For instance when six fowls were exposed to refrigeration by being placed in a cold bath, all died. Of eleven placed under the action of antipyrine, the mortality was smaller, six dying out of the eleven; or when under the action of chloral, when the mortality was still less, one dying out of eight.—*Ibid.*

EXTRACTS FROM FOREIGN JOURNALS.

German Review, by RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

MEAT INSPECTION IN BERLIN.

In the public slaughter houses of the central abattoir, there were 10,510 cattle, 8598 calves, 29,496 sheep and 38,729 swine killed, in Berlin, during the month of August. Altogether 87,333 animals as against 78,267 in August, 1890; an increase of 9066, of which 634 were cattle, 3087 sheep, and 5670 swine—325 calves less in Aug. 1891, than Aug. 1890.

Of those destroyed 651 were condemned as unfit for human consumption; this number includes 104 cattle (75 on account of tuberculosis and 26 from *tænia echinococcus*) 15 calves, 10 sheep and 522 swine (302 from tuberculosis, 105 from *tænia echinococcus*, and 26 on account of *trichinæ*). The number of individual parts and organs condemned amounted to 7829 (of these 3105 were from cattle); among this number were 2773 lungs and 1359 livers. In the city stations for the inspection of imported fresh meat 11,306 quarters of beef, 6994 calves, 5233 sheep, and 8284 swine were registered. Of these 25 quarters of beef, 16 swine (1 on account of *trichinæ* and 6 from *tænia echinococcus*), 1 calf, 4 sheep and 28 organs and parts, were condemned.

LIEGNITZ, Sept. 17.—According to official bulletins, the number of persons in Muhlradlitz afflicted with trichinosis has been 55; 5 of them have since died. The meat inspector was immediately suspended from office and will have a hearing.—*Wochensch.*

LEUCOCYTHÆMIA IN THE EQUIDÆ.

On the 24th of October there appeared in the intermaxillary space of a ten-year-old horse in good condition a swelling of the glands the size of one's thumb; other symptoms of disease absent. On the 21st of November swellings of a more painful character were apparent along the cervical region; at the same time a slight enlargement of the thyroid glands was remarked, and tumors appeared in various locations known to be richly supplied with lymphatic glands. Examinations of the blood revealed an increase in the proportion of white corpuscles to 1 in 70. The diagnosis was accordingly made as leucocythæmia, and the animal destroyed.

Before this was carried out, however, the swellings of the intermaxillary glands had abated, but the general condition continued to deteriorate. Upon post-mortem examination, noted enlargements were detected in the lymphatic glands of the mesentery, as well as the solitary follicles of the intestine. The bronchial glands, and also those of the neck, shoulder, axilla and inguinal regions, varied in size from a walnut to a hen's egg, and were medium hard.

Upon the cut surfaces of the tumor there exuded a thick, white fluid. Spleen and liver much hypertrophied; the former, weighing sixteen pounds, measured 81 cm. in length, 35 cm. in breadth, and 10 cm. in thickness; color grayish-blue, hard and brittle, dry and coarse. Malpighian corpuscles and interstitial tissue enlarged. Liver hard, brittle and opaque, of grayish-yellow color, and weighing twenty-five pounds. Remaining organs healthy. Nodules absent in the spleen, liver and lungs. No pathological alteration in the marrow.—*Ztschr. f. Vet. K.* 3, 1.

INFECTIOUS MAMMITIS IN BOVIDÆ.

On November 10th, ten days before the appearance of an epizootic of foot and mouth disease, seven cows on a certain farm were affected with an apparently infectious inflammation of the mammary glands, whose intensity was of so severe a

nature as to necessitate the death of three of the patients within a period of fourteen days. The inflammation in each case embraced either two or three quadrants of the udder. In spite of careful and energetic treatment, which included deep incisions, only four of the animals were saved. In not a single case was recovery complete, since induration with subsequent abscess formation remained.

The foot and mouth disease took a more malignant course in this stable than in two others directly adjacent. Infectious abortion had been known in this same stable for fifteen years. From the foregoing we are led to believe that the apartment contained some occult source of infection; and, as a matter of fact, a drain of fair dimensions was discovered under the stalls and separated from them by means of a stone slab; stable was otherwise well ventilated.—*Thierhdk. n. Viehz.*

ETIOLOGY OF ACTINOMYCOSIS.

Prof. Growitz demonstrated, before the physician's club of Griefwold, a preparation from the jaw of a calf which had died of actinomycosis. In sawing through the osseous structure and granulations, which filled the cavities of the bone, he discovered several long grains of corn. It is highly probable that the fungus or actinomycesdrus secured entrance through the laceration due to the corn.

DANGER IN FEEDING DECAYED POTATOES.

A farmer who had for the first time given his cows specked potatoes partially cooked by scalding water discovered shortly afterward one of the animals suffering greatly from a dyspnoæ induced by tympanites.

The pausen was immediately punctured, but so violent was the fermentation that a second incision seemed advisable, whereupon the contents spurted forth upon the ground and also fell into the abdominal cavity, threatening peritonitis. In view of the liability to this complication the animal was de-

stroyed. In a second cow, which also exhibited tympanitic symptoms, the decomposition was retarded by injecting a two per cent. solution of acidum boracicum through the incision of rumenotomy.—*Deutsche Med. Ztg.* 1891, No. 77.

THERAPEUTIC NOTICES.

Accòrding to the recommendation of Hutyra, Lemke injected subcutaneously five grammes of ext. fld. hydrastis canadensis, dissolved in ten grammes of water, in each of three horses afflicted with purpura hæmorrhagica. In two patients the swellings decreased rapidly and the animals recovered; in the third, however, the reduction in size was only nominal and the subject died. The vaso-motor stimulant characteristic of this agent has caused it to be thus used in morbus maculosus.—*Ztschr. f. Vet. K.*

Schmidt has confirmed the report of Ostertag by several trials that eseridine is still more unreliable than eserine. The physiological action, as well as the dose, varies exceedingly. There are now sufficient trials recorded to enable a definite judgment to be formed of the efficaciousness of eseridine.—*Arch. f. Wiss. n. Prakt. Th.*

ALVUS ABSTRACTA.

The *Clinica Veterinaria* No. 5 recommends for alvus abstracta in cattle the following :

℞ Ant. et pot. tart., ℥ vi,
 pot. nit., ℥ iii,
 gummi gutti, ℥ iii,
 M. divid. in partes, xii,

Sig.—One part in a bottle of linseed tea every three hours.

DR. BILLINGS VINDICATED.

In the *Zeitschrift fur Hygiene*, a journal of original research published under the supervision of Prof. Koch, Vol. 10, just out, is an article by Dr. Theobald Smith, assistant in the Bur

eau of Animal Industry, in which he endeavors to uphold the position of the government and to upset the Nebraska investigations, as well as to answer a very damaging and exact criticism published by Dr. Frosch in the ninth volume of the same journal. Dr. Frosch has answered Smith's attempt at justifying himself in such a complete manner that the best thing we can do is to offer a translation of the same, as the article is not long.

The foregoing article by Dr. Theobald Smith, and especially his comments on a contribution of my own, induces me to once again place my position regarding the American swine plague clearly before the world. To begin at once with the point that seems to have mostly irritated Smith, I do not think that any one but he can find in my former article any special partiality or unjust discrimination in favor of the investigations of F. S. Billings. Such an estimate of my contribution to the question is only possible to a person who has cursorily read the same, or who is profoundly ignorant of the character of the hygienic institute at Berlin, and the work which is done therein.

As I declared in the beginning of my previous article, the reception of the cultures from Billings at this institute, and the request of Prof Koch, led me to enter upon the study of the American swine plague. The task which I had to undertake was not, as Smith appears to believe, to decide as to whom belonged the most or earliest credit for work done, but to see how far, from a purely scientific point of view, the solution of the real question of the etiology of this disease had been advanced, which, at the time, seemed to be buried in darkness in consequence of contradictory publications.

That I should depend more upon my own investigations with the cultures at my disposal than upon the investigations of Billings, should not be questioned by Smith. That I should refer to the investigations of Billings, after assuring myself of the identity of his germ and Salmon's hog cholera germ, in order to decide as to the pathogenity (disease-producing power) of the germs in swine, was forced by Smith himself, for, much as I regret to have to repeat it, the methods and ex-

periments published in the reports of the Bureau of Animal Industry, (1885 to 1887-8) do not correspond to the scientific conditions necessary to the establishment of a new infectious disease, in a manner to be desired.

It is by no means necessary for me to repeat what I said in my previous publication, as Smith admits it, in regard to the report of 1885, and on the other hand, the superficial investigations described in the other reports display so little exclusion and exact employment of Koch's methods to correspond with the importance of the assertion of the appearance of a new exciter of infection (germ), closely related to the swine plague.

I might here call attention to the fact that even in the work of Smith, described in his article in this issue of the *Zeitschrift*, the method for differentiating the two germs, the employment of the hanging drop, is not sufficiently reliable.

Smith also seems to complain that I have considered the mentioned reports of the Bureau of Animal Industry too closely after the standpoint of to-day. Even though we may have to-day new ideas of what a pure culture should be, or substantially other methods of obtaining the same, than formerly, still it was perfectly justifiable to prove the case as to how the earlier results of the Bureau correspond with these newer ideas.

As shown in my previous publication, it is evident from the report of the Bureau that at that time Koch's methods were well known there, and I do not think that it is demanding too much of the bacteriologists of the Bureau to assume that they were acquainted with the methods as published in their reports.

As to the slur upon Billings' work in Smith's publication, I can safely leave it to the former investigator to consider them. I have only to refer here to his inoculation experiments in swine, to which I am inclined to give full credit as reliable evidence, because Billings emphasizes the control of the pure cultures used in the same by other cultivating tests.

The number of these experiments was sufficiently great to demonstrate the infectiousness of the germs and their specific

characteristics. Smith neglects to observe that the experiments quoted by Billings were especially selected out of a great number. I find it remarkable that Smith should question these twelve published experiments of Billings, the value of which is beyond doubt.

The inference (by Smith) that I allowed Billings' publications to influence me in the consideration of Salmon's swine plague by no means corresponds with the facts. For judging this question I have referred to the publications of the Bureau on the assumption that in these official reports the most reliable material must be found.

In regard to the question as to whether the Salmon swine plague germ is an independent cause of a specific disease I cannot change my previously expressed opinion. How far I am right can best be judged by reading Smith's publication in this journal

As will be remembered, Salmon, supporting himself on the German schweine seuche, distinctly and emphatical asserts the existence of an independent plague and at the same time united with the hog cholera, which has the same degree of extension over the country.

Judged by the investigations published in the reports of the Bureau, we find but proportionately few cases and these not free from objections, of the appearance of a disease-producing germ in chronic cases of hog cholera. The conditions closely resemble those seen in certain infectious diseases in man, where the secondary appearance of pathogenic germs has long been observed, without any one asserting them to be independent causal moments, or the cause of extensive epidemics.

The last two cases reported by Smith in favor of his swine plague do not give evidence which sufficiently excludes the concomital existence of hog cholera also. At the same time and the same place, several swine are reported to have died from the cholera.

The fact stands for me confirmed that in the five years that have passed since the second plague was first announced not one single case of an independent appearance of Salmon's

swine plague has been reported which can be said to be free from objections.

The mistaken conception of Salmon's place in the swine plague investigations must be laid to the fact that the publications, both on swine plague and hog cholera, have his name and as such have been quoted in the literature.

From the present publication of Smith's, however, which could not be seen in reading the reports of the Bureau of Animal Industry, it is evident that Salmon was not the discoverer of either the hog cholera germ or that of the swine plague, so now we know the true condition of things in that regard.

NEW YORK PASTEUR INSTITUTE.

FIRST SEMI-ANNUAL REPORT—SECOND YEAR.

Dr. Paul Gibier, Director of the New York Pasteur Institute, begs to report upon the results of the preventive inoculations against hydrophobia performed at the Institute during the first six months of the second year of its existence (February 18th, 1891, to August 18th, 1891). During this time four hundred and fifteen persons, having been bitten by dogs, cats and other animals, applied for treatment. These patients may be divided into two categories:

1st. In the case of three hundred and forty-five of these persons it was demonstrated that the animals attacking them were not mad. Consequently the patients were sent back after having their wounds attended to during the proper length of time.

2nd. In seventy cases the anti-hydrophobic treatment was applied, hydrophobia of the animals inflicting bites having been evidenced clinically, or by inoculation at the laboratory, and in many cases by the death of some other persons or animals bitten by the same dogs.

Indigents have been treated free of charge.

The persons treated were:

New York.....	17	North Carolina.....	1
New Jersey.....	16	Michigan.....	1
Massachusetts.....	11	Pennsylvania.....	1
South Carolina.....	5	Rhode Island.....	1
Texas.....	5	Arkansas.....	1
Connecticut.....	3	Virginia.....	1
Maryland.....	2	Mexico.....	1
Missouri.....	2	West Indies (Curacoa).....	1
Ohio.....	1		

DEATH BY HYDROPHOBIA AFTER TREATMENT.

Miriam Adams, five years old, of South Framingham, Mass. ; badly bitten July 14th last, in nineteen places by a dog recognized to be mad. Treated from July 15th to August 1st. Symptoms of hydrophobia appeared six days later (Aug. 6). Died Aug. 9th.

Three other persons (two sisters of the above patient), and a man, bitten by the same dog, who received the same course of treatment, are now enjoying good health.

This, so far, is the only death by hydrophobia out of the 255 cases treated at the Institute to date.

BIBLIOGRAPHY.

A TREATISE ON PRACTICAL ANATOMY. By H. C. BOENNING, M.D., with one hundred and ninety-eight wood engravings. F. A. Davis, Publisher. 1891. \$2.50.

Although the study of human anatomy is well provided for so far as a multiplicity of books of every degree of merit can accomplish it, and nothing needed by the student of that branch of science is lacking, the student of equine anatomy is far from being so fortunate, and must be content for the present with comparatively little help from the writers of books in his quest after the knowledge which is so indispensable a part of his equipment. With the exception of a few works which are little better than brief compilations, such as Chauveau's, or perhaps Strangeway's, in our English literature, we know of none written on a plan resembling that of this treatise of Dr. Boenning, and yet we can easily un-

derstand and appreciate the manner in which written descriptions and their arrangement, like the present, can become advantageous. Of course, a work like the present requires on the part of the author special study, with much real work in the dissecting room, resulting from a peculiar bent of the mind, and interest, if not enthusiasm, in the subject, and implies the existence of a taste for anatomical investigation, which is none too prevalent among his colleagues in the profession.

For those who cultivate a genuine interest, not only in veterinary, but also in human, or rather let us say, comparative anatomy, this excellent book will be found to possess great value. In bulk it is small; the descriptions are briefly, concisely and ably written, and the illustrations are well executed, and in a word, to borrow a highly original phrase (when first employed) "no (medical) library can be considered complete without it," whether the signature of the owner is written with two or with three final initials—M.D. or D.V.S.

THE COMPARATIVE ANATOMY OF THE DOMESTICATED ANIMALS.

By A. CHAUVEAU, Revised and Enlarged with the co-operation of S. ARLOING. Second English Edition. Translated and Edited by GEORGE FLEMING, C.B., LL.D., F.R.C.V.S. With numerous Illustrations. D. Appleton & Co. N. Y., 1891. \$7.00.

Our first glance at this second English edition of the translation of Chauveau's "Anatomy of the Domesticated Animals" brought us a disappointment. Anticipating that it would be made from the latest edition of the French publication—the *fourth*—this, the second of Fleming's—appears to be made from only the *third* of the original French.

Fleming's new book is revised and considerably enlarged, and though we cannot avoid regretting the absence of the colored plates of the fourth French edition, we cannot withhold our opinion that the work before us is far superior to the original, or first edition. It contains additional matter on the comparative anatomy of some of our domesticated animals, and the whole subject is illustrated by a large number of plates.

For years this translation has been the leading text-book of the veterinary student, and for years it will continue to fill that place, and though other works on the same subject may be recommended by the favor of some of the teachers in our English speaking colleges, it is destined to become the undisputed standard *par excellence* amongst all.

CAUSE AND PREVENTIONS OF SWINE PLAGUE. By THEOBOLD SMITH, Ph.B., M.D., with Colored Illustrations. U. S. Department of Agriculture, Bureau of Animal Industry.

The matters treated in this new issue of the Bureau of Animal Industry have been the subject of much observation and consideration, together with the reasons of the *pros* and *cons* of the varying conclusions which have from time to time seemed to be reached. To be well posted, therefore, as to the theories held and the measures proposed for the extirpation of the evil in question, involves an extensive acquaintance and large study of our governmental disquisitions upon veterinary and sanitary topics, which constitute the bulk of our official medical literature. This new report presents additional facts in support of positions previously adopted and defended by the Bureau, and with fresh examinations and recent experiments, reinforces its former deductions and corroborates the results of previous investigations.

The book also contains a critical review of the writings of other investigators, which recommends itself to the careful reader for the quietness of the style and still the strength of the method in which differences in opinion or judgment upon technical work are discussed.

EPIDEMIC INFLUENZA. By R. SISLEY, M.D. Longman, Green & Co. \$2.00.

While this book (of 140 pages) mainly and ostensibly treats of influenza in the interest of its relations to the human family, one of the chapters, the 13th, is appropriated to discussion of the same (?) disease in animals. In this short chapter the author brings together a group of communications and opinions from various veterinary authorities, English and

continental, by way of a consensus of views in support of the theory of the identity of human and animal influenza, under a single denomination as one disease.

The book is ably written, printed from fair, legible type, and will afford interesting reading for veterinarians.

LA R. SCUOLA SUPERIORE DI MEDICINÆ VETERINARIA DI MILANO nel suo primo centennio 1791-1891.—(The Royal Superior School of Veterinary Medicine of Milan).

We have been favored with a copy of this great book, a work designed to enlighten the world in respect to the history of this royal veterinary institution from its origin to the present time. The material gathered in the 258 pages which compose the volume has been collected by the worthy director of the school, N. Lanzillotti Buonsanti, so well known to the veterinary scientific world through the numerous and able writings he has published, as well as by his contributions to the columns of the *Clinica Veterinaire*.

We have derived great pleasure from the reading of the present work, as well as from "looking at the pictures" which illustrate the text, and which show the progressive prosperity of the school, with the various accretions, year by year, through which it has reached its present condition. And we have inwardly queried, will the day ever come when a similar history can be written of our veterinary institutions, and wondered whether America, seventy-five years hence, will be able to boast, as old Europe does now, of her veterinary colleges.

SOCIETY MEETINGS.

BANQUET OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION AT WASHINGTON MEETING.

To the banquet-room at 8 p.m. the assemblage to the number of fifty wended their way. The table, describing a V in shape, covered with running vines and dotted with flowers, was further embellished with a number of beautiful designs. At

the head of the table was a large horse resting on a base, along which in colored flowers amid the white ones were the letters U. S. V. M. A. With our President doing the honors of toastmaster in a very happy vein, at the head, at his right were seated Hon. Jeremiah Rusk, Secretary of Agriculture; Dr. C. B. Michener, Assistant Chief of Bureau of Animal Industry; Mr. Geo. W. Hill, Chief of Editing and Publication Division; while on his left were Drs. F. E. Parsons and Jno. W. Gadsden, and Congressman Warner. Scattered around the wings in happy groups were the members and delegates of the Association. The repast, a very enjoyable one, from oysters to quail, with relishes to render more palatable, was further enhanced by the sparkling fluids that brought forth in the succeeding hour the bright humor and wit so rare that will long mark this a memorable occasion in the memories of those who indulged in its joyous pleasures.

To the veterinary profession, and so strongly applicable to many of our Association, came the highest encomiums of praise for the work done for our nation, uttered by Assistant Chief Michener and Dr. J. E. Parsons of the staff. Our country freed from contagious pleuro pneumonia and our beef products entering the marts of the world, through the work of the veterinarian, told a long and gladsome story for our whole country.

The kind words of Secretary Rusk for us, with that winning welcome, so warm-heartedly bestowed, that bid us to his den, there to enjoy the hospitality that bade us place our feet upon his table and swap stories to our hearts' delight, made the halls ring with joyful laughter and applause, as he thus spoke of the immeasurable benefit we had rendered agriculture in all its ramifying sources. Looking upon us as of so much greater importance than our sister science of human medicine, he urged a greater care and more extensive preliminary education, that would not consider its course complete until our colleges taught our pupils how much slop to give a pig, how many rutabagas to feed a cow, how to groom a horse and feed him, and how to harness him, as well as to know which end of the saddle to place toward the head.

Calling unexpectedly upon our Philadelphia guest Dr. Jno. W. Gadsden, to respond to the toast of "Our President," with that chivalrous spirit and loyal manner so characteristic of his many years in the profession, he found a very willing heart and mind to honor the name of our country's ruler and to mete him the praise well due him, for so wise a choice in his Secretary of Agriculture, who so well and completely recognized the value of the veterinary profession, and whose work so far had so conclusively shown to the world the wisdom of his keen perception.

From the lips of Congressman Warner dropped sincere words for the veterinarian in his important relation to agriculture, and he joined in the high encomium of Secretary Rusk, and applauded the fact that through him and his Bureau of Animal Industry we would, in the next twelve months, ride into European ports on the back of fifty millions of dollars worth of pork.

The relation of the press and veterinarian were humorously characterized by Mr. Hill as he referred to the fact that he was a member of the body which furnished the wind or gas by which our work and achievements struck a sympathizing and appreciative chord along the line of human impulses, and it would be no little pleasure in the future to the daily press to continue to chronicle the advances made in veterinary science.

The profession and its rapid and strong work was warmly commended by Prof. Jas. L. Robertson, and his suggestive remarks that a Yankee did not have to attend college half as long as a German or Frenchman, to learn how to pick up a horse's foot or become a complete veterinarian, brought down the house in shouts of laughter and praise.

The colleges and their rapid increase in number and the need of a broader and higher curriculum was well considered by Dr. C. C. Lyford, and he highly encouraged and commended the step of this Association to-day, that promised to mark it a leader in veterinary science, and to thus stimulate and encourage the schools of veterinary learning to better and broader work.

Our hosts and our visitors, among whom our hours were so joyous and profitable, and the pleasure of our companionship to enjoy their hospitality, found pleasant thoughts and fast-gathering memories in the words of Messrs. Faville and Winchester.

The value of associations of veterinarians and the rich fruits they were bearing all over the country, and the broad work of this Association in encouraging and directing the same, proved a fruitful theme in the richness of thought of Vice-President Williams of the Association.

Among the honored heads around the table was one whose fifty and more years in the every day work of the profession, in the hard and laborious duties of a rural practice, in season and out of season, at all hours of the day and night, and over whose head has flitted almost four score of years, still working and toiling, honored and revered by all in his profession, loved by his people among whom he daily mingles and whose whole life is as untarnished as virgin gold, and whose integrity after fifty and more years still remains unquestioned; whose sincerely honest work in all that he has done still stands unchallenged, sat the venerable Isaiah Michener of Pennsylvania. Called to speak by toast-master Huidekoper, he gave utterance to these quaint and amusing remarks that had for its emblem the Association so well represented around the festal board:

“I attended the first call made for the purpose of forming a veterinary association, which was held in New York in 1863. The idea of forming such a society I think originated in the office of Dr. Jennings in Philadelphia; and I now propose to set up a horse to represent this society from its inception to the present time. In this preliminary meeting in Philadelphia we had a mare that was thought to be pregnant, and it was agreed that she should be taken to New York and professional accouchers should be summoned from Boston, Philadelphia and other places to be present on the anticipated parturient day. Well! the colt was soon born under the manipulations of the professors present. But, what a colt! It was ewe-necked, down-headed, narrow-breasted, crooked-

legged, walked on the fetlock joints and was thought by the professors to be near-sighted. The groom was ordered to lift it up and it soon began to feel about its mother's front legs for something to eat, when a wag present suggested that it hadn't horse sense; didn't know where to find the teat.

"Now, this colt must have a name, and a committee was appointed consisting of Drs. Stickney, Michener and others to give it one. In their consultations several names were suggested, one of which I remember was "Veterinary Association," which was vigorously opposed, because the vets. of Philadelphia had a short time before a meeting that a reporter attended and the next day published that he had attended a vegetarian meeting and all their talk was about horses, so that name would not do.

"I then suggested the name of 'United States Veterinary Medical Association,' which was adopted. It was a long, heavy name for such a nock-kneed youngster as he was. He was now left in the hands of a groom to be cared for for a year; then notices were sent all over, that any one wishing to become shareholders in this promising youngster should meet in New York, which they did in goodly numbers, all of whom were delighted with the improvement the youngster had made; he now stands straight on his legs, head up, mane and tail combed out and smooth, glossy coat, all of which go to show that he has sprung from no mean ancestry.

"In a year from this we see this youngster on a trip to Boston, the great hub of the universe, and going at the rate of three minutes to the mile, and he shows the ability to keep it up; but some one remarked that his wind was not good, that he blowed and snorted as if he was a "Roarer," but he had to shut up quick, for an avalanche of contradictions that were showered upon him. Next we find him on a trip to Philadelphia, followed by a number of admirers. Next we see him on the road to Chicago at a neck-break rate of speed; he is there recognized as a standard bred horse, none better in the United States of America, and registered too.

"So anxious have our Pennsylvania law-makers been to have him well groomed and cared for, that they have extended the

time for applicants to take care of this horse for two years longer, and any one who has ever removed the placenta from a cow or found a soft place in her tail to cut into to let the wolf out, shall be entitled to register.

"But here to-day we find this noble horse standing erect, 16-1 hands high, proportioned in every part and ready for any emergency, and is worth to-day to the United States one hundred thousand dollars, and let me tell you, he knows oats from chaff, and if any of his numerous feeders expect him to partake of chaff or mouldy oats you will see by the set of his ears and cock of his eye that if you get too near to him you may feel the strength of his masseter muscles or the force of his heels.

"This horse is known all over the United States and people come from all parts of the country to see and admire him. And may he continue to develop under a law of evolution, until the lamps of Heaven are extinguished and the sun has burned out his splendor."

A tribute in feeling words, timely spoken and uttered from a sincere heart, to those of our number who had crossed to the other side never to return to us again; their life work and the lessons they had given were briefly told by Dr. Dougherty, and, standing, he asked that we drink in silence to their unforgotten memories.

Parting again for another year then became the duty of the hour and the meeting of 1891 must only now be one in joyful memory.

N. G.

OFFICERS, COMMITTEES, AND RESIDENT STATE SECRETARIES OF
THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.

President, R. S. Huidekoper, Park Avenue and 42d St., New York. *Vice-President*, W. L. Williams, Lafayette, Indiana. *Secretary*, W. Horace Hoskins, 12 S. 37th St., Philadelphia, Pa. *Treasurer*, James L. Robertson, 409 9th Avenue, New York City.

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PRIZE.—D. E. Salmon, Washington, D. C. D. J. Dixon, Hoboken, New Jersey. N. P. Hinckley, Buffalo, N. Y.

ARMY LEGISLATION.—W. B. E. Miller, 527 Penn St., Camden, N. J. C. B. Michener, 1303 Q. St., N. W., Washington, D. C. F. L. Kilborne, Dept. of Agriculture, Washington.

PUBLICATION—W. H. Hoskins, 12 S. 37th St., Philadelphia, Pa. S. E. Weber, Lancaster, Pa. W. S. Kooker, 457 N. 4th St., Philadelphia, Pa.

SPECIAL COMMITTEE ON FOOD INSPECTION.—Olof Schwartzkopff, cor. 4th and 14th Avenue, S. E., Minneapolis, Minn. G. C. Faville, 210 St. Paul St., Baltimore, Md. W. Bryden, 36 Sudbury St., Boston, Mass.

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South Dakota,	- - - -	C. A. Cary, Brookings.
Delaware,	- - - -	H. P. Eves, Wilmington.
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Maine,	-	-	-	-	F. L. Russell, Orono.
Massachusetts,	L. H. Howard,	144c	Washington St.,	Boston.	
Michigan,	-	-	-	-	E. A. A. Grange, Lansing.
Minnesota,	-	-	-	-	H. N. Waller, Windom.
Montana,	-	-	-	-	M. A. Piche, Fort Custer.
Missouri,	-	-	-	-	John S. Meyer, St. Joseph.
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New Hampshire,	-	-	-	-	W. T. Russell, Nashua.
Ohio,	-	-	-	-	Wm. R. Howe, Dayton.
New York,	-	-	John Wende,	1593	Main St., Buffalo.
Oklahoma Territory,	-	-	-	-	C. D. McMurdo, Fort Sill.
Pennsylvania,	W. S. Kooker,	457	N 4th St.,	Philadelphia.	
Rhode Island,	J. A. McLaughlin,	1	Waterman St.,	Providence.	
South Carolina,	-	-	-	-	B. McInnes, Charleston.
Tennessee,	-	-	J. W. Schiebler,	312	3d St., Memphis.
Virginia,	-	-	-	-	John A. Myers, Harrisonburg.
Washington,	-	-	-	-	S. B. Nelson, Spokane Falls.
Wisconsin,	-	-	-	-	V. T. Atkinson, 563 Milwaukee St.

FOREIGN.

New Brunswick,	-	-	-	J. H. Frinck, St. John's.
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KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The Keystone Veterinary Medical Association met at the College of Physicians, 13th and Locust Sts., Philadelphia, Oct. 3, 1891. Meeting called to order by the President, W. Horace Hoskins. There were present Drs. Hoskins, J. B. Raynor, Kooker, Lintz, Cullen, Webster, Eves, Werntz, and Schreiber, and as visitors Drs. Senseman, Gadsden, McDowell, and Dr. Benjamin Lee, Secretary City Board of Health.

The minutes of June and September meetings were read and approved.

Letter read from Dr. Formad, regretting his inability to be present to read his paper on account of his being compelled to go to New York unexpectedly.

A communication from Robert Formad, tendering his resignation as a member, was referred to the Board of Trustees for action.

The application of John Macfayden for associate membership was received, with the endorsement of Charles Lintz, V.M.D. Referred to the Board of Trustees for their report.

The President said that according to the communication received from Dr. Formad we would not have a paper from him on tuberculosis to-night. He was very sorry and thought those present were also. The subject is one that is of great interest to the sanitarian, whether he be a veterinarian, human practitioner or one of the laity. There is some obscurity on the subject that was to be discussed to-night, upon which he hoped there might be some light shed. The subject as announced was "Can tuberculosis be transmitted from the animal into the human system by milk?"

Dr. John W. Gadsden, being called upon, remarked that he was sorry he had not known that he was to be called to say anything on the subject, for he then would have been prepared with data as to facts. The preponderance of evidence is that tuberculosis is transmissible, and in his own mind there is no doubt of the fact; but there is some scientific investigation needed to prove it. In his own practice he quoted a case of a gentleman residing on Walnut street having a cow to which his attention was called professionally. Upon examination he found conclusive evidence of tuberculosis, and ordered her destroyed. The owner refused and continued to use the milk. His wife drank a great quantity of the milk, most of it while warm, fresh from the cow. She contracted tuberculosis and died.

Dr. W. B. Werntz is convinced that tuberculosis is transmissible by the milk from animal to animal and from animal to the human family. While a student at the University (Vet.

Dept.) they had a tubercular cow in the hospital under observation, and for experimentation. Dr. Huidekoper asked him to procure a young calf free from any tubercular taint, which he did from a Mr. Potts. The herd had never had a case of the disease nor has it had since up to this time. The calf was three days old when given to this cow to nurse. When six months old it was killed and every lesion of tuberculosis was present. Milk from the tubercular cow was fed to pigs which were known to be free from the disease, and they proved on autopsy to have contracted the disease.

There was a family living in West Philadelphia consisting of father, mother and eight children—the father an exceptionally strong, healthy man, from a family of long lives and free from any tubercular taint; the mother had no knowledge of any of her family that had ever died from any tubercular trouble—all very healthy people. Six of her children were raised by the breast and all are the very types of physical strength. The other two (boys) were raised by the bottle, owing to the mother having gathered breasts. These two boys died of consumption. The inference to be drawn in these cases is that the germs were taken into the system by the milk from tubercular cows.

Dr. Webster stated that there is a great amount of tuberculosis in his practice. In one dairy some of the milk was fed to a pen of pigs, which produced the disease in them. One of the pigs was killed and the lungs were sent to his place for examination, and a part of them were eaten by a pet cat of his weighing not less than twenty pounds. The cat is now in the last stages of consumption.

Dr. Eves stated that about Wilmington there is a great amount of the disease among the cattle, the milk of which is consumed by the citizens of Wilmington. He is not conversant with its effect upon the Wilmingtonians.

Drs. McDowell and Cullen were both of the opinion that the disease is transmissible, but had not the opportunity to follow up any particular events to prove their theories.

Dr. Benjamin Lee, Secretary of the Board of Health of Philadelphia, was glad to be present and see the interest

taken in the subject. Go on agitating and investigating the subject and we will give you all the aid that lays in our power. There is no doubt in my mind that many of the diseases that are not traceable are due to the transmissibility of the germs from diseased meat and milk. What we want is greater interest to be taken in the subject by veterinarians and physicians. If medical practitioners of both branches would do their duty we could get legislation to greatly decrease diseases and epidemics. You are all aware of the efforts made by the Board of Health to prevent the pollution of the streams of the State, and of our defeat by our learned legislators, due, in part, to the apathy of the medical profession, and largely to the money of manufacturers, dyers, and butchers.

Dr. Schreiber, Milk Inspector of Philadelphia, is of the opinion that the disease of tuberculosis is transmissible, not only from animal to animal, but to the human family. The best and surest way to remedy the evil is to destroy the animals affected.

The discussion was brought to a close.

Dr. Eves cited the following: "Was called on June 16th, 1889, to visit a cow suffering, as the owner stated, with a mysterious disease, having had seven to die within two or three weeks, this one making the eighth. The herd consisted of nine cows and one calf. I found No. 8 very weak; staggered when made to walk. Her posterior limbs were apparently partially paralyzed. Slight flow of saliva, eyes of an anxious, haggard appearance, slight protrusion, diarrhœa, painful venusmus. Symptoms given of frequent licking and biting at the feet and lower parts of legs (posterior). Appetite impaired; no trouble as to drinking. Inclined to be dull, but at times to be uneasy. Pulse weak and accelerated. Temperature normal. History of having been sick for several days and growing weaker. The other seven were held about in the same way, excepting one young cow, which was inclined to be cross, but not violent. The owner placed a great deal of stress upon the fact that they were continually biting the feet and legs. He would not allow me to destroy her,

but was to inform me of her death. Searched the pasture; found nothing unusual. Cows had been running on pasture all spring.

On July 3d held post-mortem; found No. 9 sick also; destroyed her, and found both presenting the same lesions. Rumen contained quantity of grass. Omasum was in the state of dry impaction—very dry. Posterior to this: Intestines and fourth stomach were empty. Intestines manifested lesions of diarrhœa; no enteritis. The liver tended to be rather friable. In fact, no marked lesions, excepting the impaction of the third stomach, which was thorough in both cases. The owner asked me this time to give him the symptoms of hydrophobia in the dog, which I did. He then told me that his dog certainly had the disease, and that he had seen him chasing and biting the cows several weeks previous. He acted so strangely that he shot him, but at the time thought nothing of his chasing the cows, excepting that it was unusual for him to do so. I did not make a diagnosis; in fact, I was at a loss to know what disease I was dealing with.

On July 4th, next day, I was called in another direction, about eleven miles from the first place, to see some cows. I found two cows held with precisely the same symptoms as the others I had visited, with the history of several others having died within two weeks. These cows were not violent; could handle them as the others, but seemed to be a little wild on approaching them, but I did so without trouble. Here received history of two dogs having been seen biting the cows about five weeks previous to my visit. The cows were bitten, and bitten considerably, but the bites were all healed at the time of my visit. Did not get a chance to hold post-mortem.

On July 17th called by another party to see a cow in the same district; cow showing same symptoms. No history of any dogs, but his neighbor, about half a mile distant, had lost nearly all his cows, and that he had shot a dog in the act of biting them, but after several, or rather nearly all, had been bitten. I drove over and received a complete history from the man that shot the dog. The symptoms were precisely

the same as those given previously, and that every cow that was taken died. His brother, directly opposite, had also lost a number of cows; the same dogs were seen among his cows and had bitten them. Two of them had the ends of their tails bitten off; they escaped the disease, having no other bites on them. These cows had all been visited by a veterinary surgeon, but not one yielded to treatment. The dog was a member of the shepherd family. His partner (the other dog) escaped, but was shot some time afterward, he acting in a peculiar manner.

About a week after this, another man, from nearly the same neighborhood, only one mile from Cases No. 2, called me to see a cow. I found her down with the same symptoms, but much wilder. Her eyes were rolling, her head swinging, and bawling, frothing at the mouth. He had five others to die, and one of them became very violent, and was shot while in the act of breaking everything to pieces. The same dogs were seen among his cows. I came to the conclusion, after seeing Cases No. 2, that I was dealing with rabies, and after getting the history later, I am confirmed of the diagnosis of rabies, as these farmers are all reliable men, and I believe their cows were bitten by these dogs, as they state. And the same dogs, with the exception of Cases No. 1, visited each herd that were affected. I at first thought of Texas fever, but the post-mortem changed my opinion immediately. About fifty cows in all were affected and died.

Dr. Hoskins reported a case as follows: The subject of this somewhat unusual and unique case was a large Maltese cat, about two years old. Was injured on March 9th from flobert rifle, with bullet marks at both inner and external canthus of right eye. Was ordered to my infirmary on 10th, treated antiseptically in conjunction with anodynes locally until the 26th, when I considered extirpation of the entire eye the best treatment, which was carried into effect. On the 5th of April the cat was sent home with the entire healing process apparently completed.

On June 8th my attention was again called to the cat, and found the orbital cavity partially filled with a catarrhal dis-

charge. A mild astringent wash gave the necessary relief in a few days.

On August 25th I was summoned to attend him for lameness. A thorough examination of the limb (the right forward) failed to reveal any cause for the same, and I again ordered him to my infirmary for treatment. On second examination, after watching the animal for twenty-four hours, I diagnosed a paralysis of the entire limb, and suspected a central cause for the same. At the time the eye-pit was in good condition, but in the face of a good appetite, the animal had lost much flesh and was very sluggish in all his movements. He grew worse from day to day, when on the 10th of September I obtained the owner's consent for his destruction. Carefully removing his integuments in the neighborhood of the face and fore limbs, I failed to find anything. I ordered an attendant to boil out the head, body and fore limbs. This revealed the presence of a misshapen rifle bullet at the anterior portion of the brain about the point of emergence of the optic nerves, firmly imbedded in the nerve and brain tissue.

On motion adjourned.

W. S. KOOKER, Secretary.

WESTERN IOWA VETERINARY MEDICAL ASSOCIATION.

The Western Iowa Veterinary Medical Association held its third meeting at Carrol, Ia., October 21st, 1891, President Johnson in the chair. Present: S. H. Johnson, Pres., J. I. Gibson, Vice-Pres, G. A. Johnson, Secretary-Treasurer, and Prof. W. B. Niles of the Veterinary Department of the Iowa Agricultural College.

Minutes of previous meeting read and approved.

Letters were read from J. Miller, V.S. Sioux City, S. Stewart, D.V.M., Council Bluffs, and J. M. Smith, V.S., Cherokee.

The President reported that as committee to procure a list of service fees of the Ontario Veterinary College and I. S. M. D. A., he had secured a list from the college but not the other.

Under unfinished business, two articles, one on ethics and one regulating changes of the by-laws, were added and the by-laws thus completed were adopted.

Under new business, the subject of legislation was discussed, and it was the unanimous opinion that it would be impossible to get an iron clad bill through the coming Legislature, and that any law that recognizes quacks just because they have been practising five or ten years is a detriment, and an insult to the profession. But all thought that a law could be framed and passed that puts no restrictions on quacks practising, but forbids them the use of the title of veterinarian or analogous titles. If such a bill can be had it will enlighten the public, so that they will know what kind of a practitioner they are employing.

A list of service fees were drafted, to be presented to the Iowa Veterinary Medical Association at the meeting to be held at Des Moines, Dec. 12 and 13, 1891.

The Secretary was elected a delegate to the Iowa State Veterinary Medical Association.

The application of J. J. Miller, V. S., of Sioux City was presented and he was elected a member.

The President then called on G. A. Johnson, who presented a paper on "The Preparation of Animal Sutures and Pilocarpine as a Purgative for the Horse."

During the discussion that followed, Prof. Niles advanced the idea that eserine in large doses caused the discharge of watery fæces.

Prof. Niles then reported a case, from the college hospital record, of pelvic abscess situated between the rectum and the vagina, which was opened per vagina, and readily healed under antiseptic treatment.

The Association then adjourned to meet again in Jan., 1892.

G. A. JOHNSON, *Secretary*.

SOUTH DAKOTA VETERINARY MEDICAL ASSOCIATION.

On September 24th several South Dakota veterinarians assembled in the parlor of the Cataract Hotel, Sioux Falls,

and organized an association which will be known as the South Dakota Veterinary Medical Association.

The objects of this Association are the mutual advancement of its members in veterinary science, the cultivation of fraternity, the elevation of the profession and the diffusion of the knowledge of veterinary medicine and surgery. After an hour's time passed in hand-shaking and making acquaintance, order was called. The constitution and by-laws were read, adopted and signed by those present. After which the following officers were elected :

President, Prof. C. A. Cary, B.S., D.V.M., Brookings, S. D.; Vice-President, Dr. W. F. Keller, D.V.S., Sioux Falls, S. D.; Secretary, Dr. D. B. McCapes, V. S., Vermillion, S. D.; Treasurer, Dr. E. K. Paine, D.V.M., Sioux Falls, S. D.

The meeting then adjourned until next year, when it is hoped there will be interesting topics before the Association and much benefit derived.

WESTERN PENNSYLVANIA VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting was held at Dr. J. C. McNeil's office, Saturday, Nov. 14th, '91. Dr. H. C. Jackson, of Sewickley, Dr. D. Martin, of McKeesport, and Dr. N. Recktenwald, of Southside, were present as visitors.

Minutes of last meeting read and approved.

James A. Waugh, V.S., read a paper on "Electrical Accidents to Domestic Animals," which was discussed by all present, and a vote of thanks was extended to the essayist.

Dr. J. C. McNeil will read a paper at the next meeting.

The next meeting will be held on the first Saturday in December.

JAMES A. WAUGH, V.S., Secretary.

ALABAMA STATE VETERINARY MEDICAL ASSOCIATION.

The Alabama State Veterinary Association met at the parlors of the Exchange Hotel, Montgomery, A. H. French in the chair, and effected the following organization : A. H. French, D.V.S., President, Birmingham, Ala.; T. J. Kean, V.M.D., Vice-

President, Canebrake Agricultural Experiment Station, Uniontown, Ala.; Geo. W. Pope, D.V.S., Second Vice-President, Mobile, Ala.; W. J. Richardson, D.V.S., Third Vice-President, Birmingham, Ala.; M. B. Whitehead, D.V.S., Secretary and Treasurer, Montgomery, Ala. This meeting was called with the object of securing such necessary legislation for the practice of veterinary medicine in the State of Alabama as will maintain it in its proper place in medical science.

M. B. WHITEHEAD, *Secretary*.

ONTARIO VETERINARY COLLEGE MEDICAL SOCIETY.

The Ontario Veterinary College Medical Society met in College Hall Wednesday evening, Oct. 21, 1891, and effected their organization for the session of '91-'92 with the following gentlemen as officers; President, A. Smith, F.R.C.V.S.; Vice-President, C. H. Sweetapple, V.S.; Secretary, J. S. Grove, Akron, Ohio; Assistant Secretary, J. W. Watson, Peru, Indiana; Librarian, F. W. Swearingen of Illinois; Treasurer, J. H. Hester of Nebraska.

This Society meets twice a week for the reading of essays and communications, and the discussion of subjects relating to the profession.

These meetings in the past have been sources of the greatest benefit to the members, and the students of this year are showing a disposition to keep up a lively interest in the work, as was well demonstrated in the meeting of Oct. 23, when the following interesting programme was presented: R. W. Tuck, of Elgin, Illinois, essay on "Surra"; J. Pickle, of St. Mary's, essay, "Purgatives" (this paper elicited a great deal of discussion); A. Gemmill, Wingham, Ont., essay on "Wounds, and Their Modes of Healing." J. L. Badgley, of Pennsylvania, then read an interesting paper on "Symptomatic Anthrax." The following members then read reports of cases which had come under their care:—T. Macfarlane, Danville, Ill., "Neurotomy"; N. Clark, London, Ont., "Acute Laminitis"; E. Nodyne, Rochester, N. Y., "Intestinal Calculi"—a very interesting case, over thirty calculi, ranging in size

from one ounce to one and a half pounds, being found in the alimentary canal of a colt. H. Fulstow, of Elyria, Ohio, then read a report of a case of "Constipation," and the meeting adjourned to meet on Oct. 27th. J. S. GROVE, *Secretary*.

CORRESPONDENCE.

SUITABLE MEMBERS FOR THE U.S.V.M.A.

In reading the editorial in the October edition of the REVIEW, with regard to suitable and unsuitable candidates for admission to membership of the U.S.V.M.A., I notice the remark made, "Several of our two-year colleges graduate men who are not able to read or write the English language, and are total strangers to other tongues."

Then follows the question, "Are they suitable for membership?" Now, I do not see why this remark should refer only to two-year college graduates. If a man takes a course in a three-year college, and is as deficient in ordinary education as the two-year man, will he be able to read and write any better when he graduates? Certainly we do not find instruction in the three R.'s embraced in the curriculum of any veterinary college, and he is not apt to improve his writing by taking notes. If the standard of the matriculation examinations is increased, there will be no need for this question at all.

I cannot help thinking that the reason the veterinary surgeon of to-day is not always treated with the respect that he might be (as few will deny), is because many are so illiterate that they are unable to command that respect. The druggist sneers at some veterinary surgeon's prescriptions, and the physician is surprised that when he sends for a veterinary surgeon he is unable to converse grammatically about the case. The remedy for this is not to give the student another year at the veterinary college, but to give him another year at a grammar school before he enters the college at all.

If the matriculation examinations at veterinary colleges were of such a nature that only men of good education could gain admission to them, then this stumbling block to the profession would be removed forever.

How can prescriptions be written accurately unless the writer has a knowledge, even rudimentary, of Latin? And yet admission to colleges may be gained without the applicant knowing that such a language exists.

There is an old saying "Knowledge is power." Knowledge of what? Of veterinary science? Oh, no; such knowledge may bring money, and then the money bring power, but in these enlightened times such knowledge alone is not power.

Men of education turn toward the veterinary profession as a means of subsistence, and there are many more who, if they felt that it was a profession not open to the ignorant, would enlist in its ranks. Not being a member of the U.S.V.M.A. myself, I trust that these remarks will not be considered as out of place by its members, but I hear so much about veterinary etiquette now-a-days that I should like to hear something about education for awhile, for without the latter it is a farce to speak of the former.

Richmond, Va.

F. HARVEY, D.V.S.

AN INQUIRY.

MR. EDITOR: I would like to be enlightened on one point, if I may trespass upon your journal to that extent. Are employees of the Bureau of Animal Industry allowed to engage in private practice? If so, I think it but just that the Department of Agriculture grant a subsidy to every veterinarian not connected with the Bureau, in order that they may be placed upon an equal footing with its employes, since the private veterinarian is equally as capable, and oftentimes more so, for public practice than the Bureau veterinarian. Although the latter may know more about "tagging steers" yet he greatly handicaps his brother in the race for dollars. I have always thought that "no man could serve two masters," but this idiom appears to be untrue, to the detriment and positive injury of some of us practitioners. An answer to this query is desired.

NON NOBIS SOLUM.

VETERINARIAN WANTED.

OTTUMWA, IOWA, Nov. 15th, 1891.

DEAR SIR: Will you please send us the name and address of some good veterinarian wishing to locate in a good town in the West. We would prefer one that has practiced to some extent. If you will answer this you will confer a great favor.

Yours,

MICHAEL & STEPHENS.

AMERICAN VETERINARY REVIEW,

JANUARY, 1892.

EDITORIAL.

“UNEASY LIES THE HEAD THAT WEARS A CROWN.”—How often must this Shakesperian adage quote itself to the “mind’s *ear*” of our friend, the worthy Chief of the Bureau of Animal Industry, and how often he must wish that his work, or that of his assistants, might be of less importance, and create less interest amongst veterinarians or others, who, for purely scientific reasons, are carefully watching the manner in which he is meeting his responsibilities, and how commendably he exerts himself to accomplish, in a manner satisfactory to all, the trust reposed in him.

In an account of the last “Echoes of the Convention,” of the United States Veterinary Medical Association, it was wisely remarked “that the Bureau seemed to be the friendly target of all chairmen and some essayists”; but true as this is, the Chief of the Bureau, Dr. E. Salmon, is always on the alert, able to defend himself, and ready with a reply to all objections alleged against himself personally, and his records, or those of the Bureau staff.

In our present issue we publish a reply from the Doctor to some of the criticisms made by the chairman of the Committee on Intelligence and Education, Dr. A. Peters, in his report, and to render the matter more intelligible we insert below an extract from the report itself, without waiting for the publication of the entire transactions of the meeting, to be printed in compliance with the vote of the Association. Our

readers will therefore be enable to perceive the drift of the remarks without embarrassment.

EXTRACT FROM DR. PETERS' REPORT.

In concluding this report, I believe that the Bureau of Animal Industry should receive a little of our attention. I thought of calling your attention to it a year ago, but my paper then seemed so long that I decided to defer what I had to say until a future occasion, and am now glad that I did so, as it has given me an opportunity to beard the lion in his den, so to speak, which I always prefer to do, if the opportunity permit.

We have connected with the United States Department of Agriculture the Bureau of Animal Industry. Its chief is a veterinarian, and a large number of his assistants are also veterinarians. It is the only department in which the United States Government officially recognizes the veterinary profession in a manner that at all appeals to our self-respect, and as the great veterinary organization of this country, we naturally take much interest in its work and usefulness. We are better able, perhaps, than anyone else to criticise its actions and results, being, as we are, specially educated on the subjects with which it has to deal. We have the same right as the rest of the people to commend the action of our servants, or to find fault with the way in which they conduct their work, besides which, by our special training, we are in a position to feel that we have a peculiar right to show our approval, or our disapproval, as the case may be, of the labors of this Bureau.

Of the practical work of the Bureau of Animal Industry I shall have little to say. It has almost eradicated contagious pleuro-pneumonia from this country, and in time will undoubtedly succeed in its complete extinction. For this service alone it deserves the thanks of the people, and has repaid many times over every cent that has ever been appropriated by Congress for its support, including all it has expended in other directions. These results could have been obtained by any good veterinarian possessed of tact and administrative ability. When we come, however, to a consideration of its scientific investigations, we cannot say a great deal for its efficiency.

If we review as briefly as possible the work done in the scientific investigations of swine diseases by the Bureau of Animal Industry, it will be quite sufficient to demonstrate to us the value of its bacteriological work and the credence to place upon any statements emanating from its officials.

If an exhaustive report were written upon the researches in swine diseases in the United States during the past few years, together with all the controversy that they have brought forth, quite a large volume could be easily filled. A year ago, when I thought of referring to this matter in my report, I should have based what I had to say upon an article by J. Amory Jeffries, M.D., which appeared in the *Journal of Comparative Medicine and Veterinary Archives*, for December, 1890, entitled "Etiology of Two Outbreaks of Disease Among Hogs." Although my report was written before the article appeared in print, I was fully cognizant of its contents, having assisted Dr. Jeffries with the work, and in fact done a portion of it myself. Material which I have since been able to avail myself of only confirms me in the views which I then held, without changing them in any important particular.

The other articles of which I speak, and to which I would refer all interested in the matter, as time will only permit of my presenting the conclusions I have drawn from them, are:

"A Contribution to Our Knowledge of the Cause of Swine-plague, and its Relation to Connected Bacteriological Operations," by Dr. P. Frosch (*Zeitschrift für Hygiene*, vol. 9, page 235). Editors, Dr. R. Koch and Dr. C. Flugge.

"Upon Our Knowledge of the American Swine-plague," by Dr. Theobald Smith, Chief of the Bacteriological Laboratory of the Bureau of Animal Industry. (*Zeitschrift für Hygiene*, vol. 10, No. iii, page 480.)

"Reply to the Preceding Work of Dr. Th. Smith, upon 'Our Knowledge of American Swine-plague,'" by Dr. P. Frosch, Assistant in the Institute of Hygiene of the University of Berlin. (*Zeitschrift für Hygiene*, vol. 10. No. iii, page 509.)

Also at a meeting of Scottish Metropolitan Veterinary Medical Society, held in Edinburgh, February 25th, 1891, Mr. Thomas Bowhill, M.R.C.V.S., read a paper upon "Swine Fever." Vide *Veterinary Journal*, May, 1891. To sum up:

Jeffries concludes that Billings' "Swine-plague," and Smith's "Hog Cholera" germs are identical, and differ from those of the disease he has investigated; and that cultures Smith sent him of his "Swine-plague" germ are identical with the disease germs that he (Jeffries) has been studying, which produce a septic pneumonia in swine that they can communicate to calves, and very probably to lambs, sheep and other animals.

In short, the much-vaunted "Swine-plague" is simply a septic disease which is not peculiar to swine by any means. It is caused by one of a large group of bi-polar organisms, capable of producing similar symptoms in such small experiment animals as are susceptible to them. Jeffries concludes by saying: "But while two germs of this class are known to infest hogs in the United States, there may be others in Europe, *e. g.*, 'Wild seuche.'"

I think that Jeffries' work is particularly accurate and very valuable, and am surprised that it has not attracted a great deal of attention, although it does not seem to have done so.

Dr. Frosch, in his first article, compares the work done by Billings with the work supposed to be Salmon's, and draws the following conclusions:

1.—"The bacterium of Salmon's hog cholera and Billings' swine-plague are identical.

2.—"The same is the cause of the American swine-plague, while the proof of an etiological relation of the bacterium of Salmon's swine-plague to the first, especially to a second plague of like extent, has not yet been sufficiently demonstrated.

3.—"That the bacterium is identical with Selander's schweine-pest bacterium" (Selander's schweine-pest being the swine disease of Sweden and Denmark), "but different from the bacterium of the German schweine-seuche, chicken cholera, rabbit septicemia and ferret plague.

4.—"The ferret disease is caused by a separate kind of bacterium, and cannot be grouped with the rest."

Dr. Smith's is a reply to Dr. Frosch's first article.

Dr. Frosch's second paper is a reply to Dr. Smith,

Dr. Bowhill's paper announces that he has found in cases of swine fever, in England, a bacterium identical with Billings' swine-plague germs, and that he has sent specimens to Billings, who confirms his discovery.

Here we have two excellent investigators, one in the United States and one in Germany, confirming the identity of Billings' swine-plague germ and Salmon's hog cholera germ, and each one acting independently of the other, while the third finds the same germ as the cause of the English swine fever.

Dr. Billings boldly announces that he found his germ of swine-plague in July, 1886, among the first pigs that he examined in Nebraska, which had died of the disease.

Salmon, in his report for 1884, discovered a micrococcus as the cause of what he then called swine-plague. In his report the next year he says it is due to an oval, motile bacterium. Later in some of his replies to his critics he attributes the discovery of this organism to his assistant, Dr. Th. Smith. Dr. Frosch says: "This circumstance not only readily explains the intrinsic contradiction of the reports for 1884 and 1885, but also seems to have influenced Salmon's further investigations."

In a special report of the Bureau of Animal Industry upon "Hog Cholera: Its History, Nature and Treatment," issued in 1889, there is a short history of the investigations of swine diseases made in the United States, but we do not find any mention of the name of Billings, although he discovered at once the bacterium for which the Chief of the Bureau of Animal Industry had been searching for years, and which he probably would not have found for some time if he had not had the help of an assistant whom he was not generous enough to credit with the discovery, and so let it pass as his own.

In the report of the Bureau of Animal Industry for 1886, page 20, we find the following statement:

"In view of the results of investigations which have shown the existence of two distinct infectious diseases of swine, perhaps of equal virulence and distribution, a change in the nomenclature becomes necessary in order to avoid any confusion in the future. Since these two diseases have been considered as one in the past, and the name swine-plague and hog-cholera have been applied indiscriminately, we prefer to retain both names, with a more restricted meaning, using the name hog-cholera for the disease described in the last report as swine-plague, which is produced by a motile bacterium, and applying the name swine-plague to the other disease, the chief seat of which is in the lungs. This change is the more desirable since recent investigations have shown that the latter disease exists in Germany, where it is called swine-plague (*schweine-seuche*.)"

The following questions propound themselves to us after reading the above:

After speaking of the disease as swine-plague for several years did the Chief of the Bureau of Animal Industry call Billings' swine-plague, "Hog Cholera" for the sake of creating confusion? (Thus while apparently ignoring him, at the same time paying him the greatest possible compliment in the power of one man who seems to so admire another.)

If the name "Hog-cholera" was not used in place of swine-plague for the purpose of creating confusion, why was a septic pneumonia of the pig termed "Swine-plague," unless it was for the purpose of causing still further confu-

sion? when, as we have seen, the disease is not confined to swine, but a little careless study would have shown that pigs could easily communicate it to other species of animals. Dr. Frosch pays the methods of bacteriological study pursued in the laboratory of the Bureau of Animal Industry the deservedly high compliment of doubting any "etiological relation of the bacterium of Salmon's 'Swine-plague' to the pest, especially to a second plague of like extent."

But Jeffries' work removes all doubt upon this matter, and we know that the Bureau of Animal Industry has found another disease of swine, which is a septic pneumonia, and is not alone confined to swine, and which for some reason or other they choose to term "Swine-plague." Furthermore it is not impossible that one animal may be infected with both maladies simultaneously.

The so-called swine-plague of the Bureau of Animal Industry is one of those septic diseases due to filth, and is seen chiefly where putrefying city swill is fed, and farmers around Boston find that if the swill is boiled and then fed before there is time for putrefactive process to commence again, that they are not troubled with it. In this respect it resembles closely the German schweineseuche. If this be a true swine-plague, make the most of it.

Dr. Smith's article is, as I have said, in reply to Dr. Frosch's first article. In it he attempts to uphold the work done under the auspices of the Bureau of Animal Industry, and to throw discredit upon the work done in Nebraska, and also to answer the criticisms in Dr. Frosch's first article.

Dr. Frosch's reply to Dr. Smith has its chief interest in his closing sentences. After briefly answering Dr. Smith's remarks, and saying that there is no need of his defending Dr. Billings, as he is abundantly able to defend himself, Frosch ends with: "From the present publication of Smith's, however, which could not be seen in reading the reports of the Bureau of Animal Industry, it is evident that Salmon was not the discoverer of either the 'Hog-cholera' germ or that of the 'Swine-plague,' so now we know the condition of things in that regard."

Whether Frosch's feelings of admiration for the honesty and generosity of the pseudo-scientist whose work he supposed he was reviewing when he wrote his first article, were equal to his feelings of pity and contempt for the assistant who was obliged to give the credit for his hard work to his chief, or lose his official head, and yet serve as a pillar for his doughty chief to hide behind in case of an attack, I leave to your imagination.

You will see that Jeffries in his paper gives Smith the credit for the work he has done. It has been no secret to me for the last year and a half as to who was actually conducting these investigations in the Bureau of Animal Industry. Having taken the investigation of swine diseases as a fair sample of this Bureau's scientific labors, are we to be expected to place any dependence upon the accuracy of the statements emanating from its officers concerning such work, especially when they conflict with the results obtained by men like Paquin and Billings, unless the work of the former is confirmed by experiments conducted by independent and unprejudiced observers of recognized ability?

How can we as a profession feel anything but disgraced when we think of the opinions which must be held in Koch's laboratory, the greatest bacteriological laboratory in the world, concerning our Bureau of Animal Industry and its scientific work?

I do not wish anyone to think that I have taken up the cudgels in Dr. Billings' behalf. Scientific research is the search after truth, and work that is recognized as good abroad cannot be ignored at home, no matter what the personal feelings of one man may happen to be towards another. No one deplores more than I the personalities that so often pervade the writings of the investigator employed by the State of Nebraska, that have done so much to detract from the dignity of his work, which I believe to be really correct and valuable; and it must be borne in mind that blackguardism does not add to the weight of argument. On the other hand a lack of honesty and straightforwardness is equally bad, or worse, and modern political methods are not to be tolerated in the conducting of scientific researches.

The former style of writing shows what it is on the face of it. The latter often hides a good deal beneath its surface. One is like the rattlesnake, which gives warning when it is about to strike. The other is more dangerous, like the deadly moccasin, which strikes its fangs into its victim without giving any indication of its presence.

If the Bureau of Animal Industry is to be a political organization, why not have its chief simply write the letter of transmissal of his annual report to the Secretary of Agriculture, and have a few true scientists in its employ to work unhampered, and make their own reports upon the questions that they have been studying upon. This at least for the sake of making a more creditable appearance to other civilized nations, if we have no respect for ourselves.

More could easily be added of adverse criticism upon the management of the Bureau of Animal Industry, but enough has been said for the present, and it does not seem advisable to continue this report to too great length.

In conclusion, I wish to heartily express my thanks to my confrères upon this committee for the valuable assistance they have rendered me in obtaining material for this report.

ACTINOMYCOSIS AND UNITED STATES MEAT INSPECTION.

—One of the most important trials in which questions of veterinary sanitary science have been involved, has taken place lately in the Circuit Court of Peoria, Ills., and through the kindness of one of our editorial associates we are enabled to give in the present number not only a report of the trial, but also some criticisms upon the testimony of one of the leading witnesses. These criticisms may be considered severe, and out of place in the REVIEW, but still, as the testimony and its conclusions are public property, their publication ought not to be considered as influenced by motives of a personal nature, so much as of professional interest. The remarks of our associate are appended;

The suit of *Greenhut vs. Pearson*, briefly outlined elsewhere in this issue, wherein Greenhut as chief plaintiff brought

action against the Live Stock Commissioners of Illinois for the sound beef value of one hundred and twenty-five distillery cattle affected with actinomycosis, and "tanked" at the instance of the Commissioners, has unavoidably caused a greatly increased interest in the subject of meat inspection, especially as to the attitude of the Bureau of Animal Industry toward the disposition of the meat of animals affected with the disease in question, so far as it relates to inter-state or international food supply.

As a leading witness for the plaintiffs, Dr. R. W. Hickman's evidence in the witness box might be taken as expressing the views of his bureau, were it not for the fact that his testimony flatly contradicts the official assertions of the Secretary of Agriculture, under whose auspices meat inspection is carried out. It is utterly impossible to harmonize Secretary Rusk's official assertions with the sworn testimony of Dr. Hickman, who, as chief inspector at Chicago, the most important meat inspection point in the country, is virtually chief meat inspector.

Secretary Rusk, in his third annual report, dated October 27, 1891, says on page 14: "In most, if not all European countries, inspectors, according to their reports, freely pass for consumption the meat of animals affected with foot-and-mouth disease, pleuro-pneumonia, localized tuberculosis, actinomycosis, and similar diseases, which, according to the views and customs of this country, must be condemned. But all the meat for the foreign market is inspected the same as that for home consumption."

A few days later, his chief meat inspector at Chicago, the leading meat inspection point in the nation, deposes as follows:

Q. (By counsel for plaintiff's, Mr. Stevens.)—Suppose an animal had an ulcer upon the jaw that was not running; was in good condition; had taken on fat rapidly and was thrifty, and was killed and the head thrown away. To what extent would the meat of such an animal be at all injurious for food? A.—I do not consider it would be.

Q.—State whether under these circumstances the partaking of that food could possibly carry the disease to any of the human family that partook of it? A.—No, sir.

Cross-examination by Counsel for Defendants.

Q.—You have in your professional capacity rejected at times fat cattle for export, on the ground that they were not fit for consumption, have you not?
A.—I have rejected them on general appearance for post-mortem examination.

Q.—Suppose they were a fat, hearty-looking lot of cattle, why would you reject them? A.—For the reason I have just given you: subject to post-mortem investigation, so I could see.

Q.—When did you attend the first post-mortem examination of an animal affected with actinomycosis? A.—In Chicago, soon after I came there. [1890.—W.] * * *

Q.—I mean, how many (examinations) have you made yourself, through the microscope, of a section of an actinomycotic tumor that came from different animals? A.—I think three.

Q.—That makes four in all during your life? A.—Of different animals—yes, sir. * * *

Q.—As a matter of fact, then, have you ever examined microscopically any sections from the internal organs of animals afflicted with this disease, to ascertain the presence or absence of these actinomyces? A.—Not specially. * * *

(Last question rejected.) Q.—What limitation do you desire to make to your former answer? A.—I want to express the idea that *I would not reject it* (carcass of actinomycotic animal) *simply because it had actinomycosis*, but I would reject an animal as unfit for food on general grounds, whether from an actinomycotic tumor or any other tumor that had drained the system.

Q.—Would you consider a fat animal, with a tumor that was discharging pus, as fit for human food? A.—If the animal was in a thrifty condition—yes, sir.

Q.—Have you ever made an examination upon an animal where the actinomycotic tumor was apparently healed, to ascertain whether or not there were any lesions or tumors in the internal organs containing these actinomyces? A.—I have no doubt there are lesions in the internal organs where the tumor on the animal has healed. *I recall no case where I have made a special examination*, but I have no doubt that it is a fact.

This evidence shows a grave want of accord between Dr. Hickman and Secretary Rusk, for while the latter says animals affected with actinomycosis *are* condemned, the former swears positively that he *would not* condemn an animal at all for the disease, and that he does not condemn them, but merely rejects them for live export. Why? Dr. Hickman has not answered, but it is presumably because he knows that European countries raise all that kind of beef at home that they desire. What becomes of these rejected cattle does not plainly appear, but the only logical conclusion to be drawn is that under Dr. Hickman's orders these rejected cattle (which are actinomycotic but to his mind healthy for food) are

slaughtered, and the more patent evidences of disease obliterated, when the remainder of the carcass is passed as healthful food for national and international trade. Yet Dr. Hickman admits that the disease is transmissible, that it may invade various organs, that he never made a critical examination of a carcass to see what organs, and that ordinarily he was not furnished with a microscope of sufficient power to identify the actinomyces.

As chief inspector at the chief meat inspection point in the United States, his ignorance is utterly amazing. Chief inspector at Chicago, yet has never made a study of actinomycosis; has made no critical post-mortem examinations of affected animals; has made microscopical examinations from tumors of about three cattle; does not know what organs or tissues, of either animal or man, become affected, and has taken no measures to learn; has practically seen the disease only in or about the head; considers a live steer with an actinomycotic tumor attached unfit for export, but the same steer decapitated as perfectly healthful as food for native or foreigner! Dr. Hickman apparently considers his highest duty as a meat inspector to be to make meat *appear* healthy by obliterating the evident signs of disease, a position which is conspicuous mainly for its lack of honesty.

When Dr. Hickman returned to Chicago, after his above-related testimony, he is reported to have expressed himself as very solicitous that the plaintiffs should win, and thus force actinomycotic meat upon the market, lest that, should the jury decide the disease contagious, it would ruin our export trade. In what? Actinomycotic meat? If Dr. Hickman was at all acquainted with the literature of actinomycosis, he would know that the decision of a petit jury in this case would not alter the views of Crookshank, Fleming, John, Israel, Ponfic, and others who have given the disease a thorough study. We have more right to fear that our export cattle trade will be seriously crippled by the most important meat inspector in the country going into the witness-box in a case of international interest, and testifying that he cuts off cattle's heads to obliterate evidence of disease before export.

ing the carcass, and admitting at every turn the most abject ignorance possible of the probable relation of actinomycotic meat to human health, and all this notwithstanding the positive official declarations of Secretary Rusk that the carcasses of these animals *are condemned* and excluded from both home and foreign markets.

The *Chicago News* for November 21 contains an alleged interview with Dr. Salmon, Chief of the Bureau of Animal Industry, in which he fails to take any positive stand in the matter, but suggests that the danger is overestimated, and the words attributed to him might readily be construed to mean that in our present knowledge he believes that until a tumor has gained large dimensions and is discharging pus, the meat is fit for food. A positive conclusion can not, however, be drawn as to his exact stand, but the above suggestion is the position held by many. It is a very peculiar position for anyone to occupy, as, leaving out the thought of danger from the contained living micro-organisms, it is very difficult to understand why a *discharging* tumor, from which the pus is promptly evacuated after formation, or a tumor we may say which *has contained* pus, renders the meat of the carcass unfit for food, while a tumor *containing* pus renders it healthful.

Certain occurrences in connection with the trial further lead us to ask:

In whose interest should meat inspection be made?

Were we to judge the matter from the standpoint of Drs. Hickman and Billings, we would have to conclude that meat inspection is a process designed to secure to the producer a sale for his meat regardless of the consumer's wishes or health.

The public press, at the date of the trial, was also well filled with news of how many telegrams of encouragement and sympathy the plaintiffs were receiving from cattlemen throughout the West. We have no doubt that there are many cattlemen who would like to sell these actinomycotic animals for food, but a careful canvass among these same cattle raisers would show but few of them who care to eat the flesh of such animals themselves.

We have all along contended that meat inspection should be made in the interests of the meat consumer, and that they are the parties to be satisfied and not the cattle raiser.

When we ask a butcher for *beef* we should not be served with mule meat; and when we ask and pay for sound meat we should not receive that from an animal affected with actinomycosis, unless we believe such meat to be really *sound*.

Persons who object to the meat of animals affected with actinomycosis being sold upon the general market would not, as a rule, object to its being sold for what it really is—but the seller insists that it shall be sold for what it is not. So Dr. Hickman believes these carcasses healthy, yet he refuses to place this meat upon the market on foot, with the evidence of the disease perfectly patent, but excises the principal disease-marks, pleases the seller and deepens the ignorance of the consumer of meat as to what he is eating.

There seem to be two ways by which this meat can go upon the market in a satisfactory manner to most consumers.

First; To be officially labeled and sold as meat from animals affected with actinomycosis. Second; Such meat, after destroying the evidently affected parts, to be thoroughly cooked under official supervision, and then sold as sound meat. One of these propositions should prove satisfactory to sellers, but there are men among them who desire to reap the highest market price for this beef, which they would not knowingly eat themselves but think it sufficiently good for others, especially *if the tumors are removed, and Hickman and his colleagues say it is healthful, and the consumer rendered wholly ignorant.*

We have great faith in the good intentions of the highly esteemed Secretary of Agriculture, and believe that he, in conjunction with Dr. Salmon, is trying to secure reliable meat inspection, but when Dr. Hickman comes into court and testifies as he did in Peoria, had Secretary Rusk been present and heard him he would have preferred in the future to buy his table meat from carcasses free from Hickman's brand.

W.

ILLINOIS VETERINARY MEDICAL ASSOCIATION. — The worthy Secretary of this body has furnished us with a report

of the last meeting of the Association, with the announcement that the papers read at the meeting will soon be forwarded to us for publication. We thank our co-laborers for so kindly remembering the REVIEW, and regret that the crowded condition of our pages precludes the possibility of our giving the entire transactions in the same manner as we have done on previous occasions. Our friends in Illinois, however, are aware that it is only from lack of the opportunity to do so that we have failed to print their proceedings in full, and the hospitality of our columns is always tendered to their favors.

ORIGINAL ARTICLES.

REPLY TO DR. AUSTIN PETERS' CRITICISM.

BY DR. D. E. SALMON, Chief of the Bureau of Animal Industry.

At the meeting of the United States Veterinary Medical Association, held in Washington on September 15th and 16th, 1891, a meeting from which the writer was unavoidably absent, Dr. Peters, as Chairman of the Committee on Intelligence and Education, presented a report in which he bitterly assailed and criticised the Bureau of Animal Industry, and especially the writer, as the Chief of that Bureau. This report has since been published, and has, no doubt, been perused, in whole or in part, by the readers of this journal; at any rate, it has been spread before the world as being the deliberate statements of one of the most important committees of our national veterinary organization. The assertions contained in it are of such a nature that they cannot be allowed to pass unnoticed, either by the individual whose name and reputation are involved, or by the Association before which the charges were so publicly made.

If Dr. Peters' report is true, then the writer of this communication is an unworthy member of the Association; if it is false, then the Chairman of the Committee on Intelligence and Education is guilty of unprovoked, deliberate and malicious slander. In either case, the self-respecting members

of the Association cannot allow the matter to stand without taking some positive action. To act intelligently they must have both sides of the controversy before them, and I have consequently prepared this reply to Dr. Peters' statements, which I shall send for publication to the two veterinary periodicals of the country.

All will agree with me, no doubt, that a person who is assailed in such language as appears in Dr. Peters' contribution, should, in common fairness, be accorded an opportunity to make a reply before he is condemned, even if there was nothing at stake but his individual reputation. And when, as in this case, there is, in addition to individual honor the reputation of a great Bureau of the National Government, a Bureau on the force of which the veterinary profession has always been largely represented, how much greater reason is there for expecting the fullest hearing and the most unbiased treatment.

Dr. Peters, in his paper, endeavored to give the impression that he boldly made these charges in my presence, since he says that he is glad that he has deferred the matter until this year, "as it has given me [him] an opportunity to beard the lion in his den, so to speak, which I [he] always prefer to do, if the opportunity permits." Instead of this being the case, he seized the opportunity when he knew I was unavoidably absent in Europe, representing the Secretary of Agriculture at the International Congress of Hygiene and Demography at London, and at the International Agricultural Congress at The Hague, to make an attack, not only on the scientific work of the Bureau, but upon my honesty and truthfulness. This attack was the more cowardly since he also knew that Dr. Smith, who has charge of the investigations, was not a member of the Association, and was, therefore, not in a position to reply.

It should be remarked, in this connection, that Dr. Peters has adopted three lines of attack. The first and chief one consists of personalities; the second is the misrepresentation of our views, in order to secure plausible subjects for criticism: while the third and least prominent, is the attempt to

controvert views which we have actually expressed. It is fortunate that this whole subject is a matter of record, and that all the evidence has been printed where it is easily accessible. There is, consequently, no excuse for misrepresentation or inexact statements.

The personalities are chiefly based on the assumption that I have failed to give Dr. Smith credit for the part which he has had in the investigation of swine diseases. "In a special report of the Bureau of Animal Industry upon 'Hog Cholera: its History, Nature and Treatment,' issued in 1889," Dr. Peters says, "there is a short history of the investigations of swine disease made in the United States, but we do not find any mention of the name of Billings, although he discovered at once the bacterium which the Chief of the Bureau of Animal Industry had been searching for for years, and which he probably would not have found for some time if he had not had the help of an assistant whom he was not generous enough to credit with the discovery, and so let it pass as his own."

We will now go to the records and see how much credit has been given to Dr. Smith for the work which he has done. In the report of the Bureau for 1885, page seven, is the following sentence: "I have been ably assisted in these investigations by Dr. Theobald Smith, whose untiring service has been indispensable and invaluable; also by Dr. F. L. Kilborne, who has had charge of the experiment station." In 1886, long before the report for that year was issued, and in order to remove any possible doubt as to the manner in which the investigations were conducted, I published an article in which the following paragraphs occur:

"Very soon after these experiments "[those of 1884] "were made, the many duties which devolve upon me as Chief of the Bureau of Animal Industry made it necessary to place the investigations of hog cholera almost entirely in the hands of my assistant, Dr. Theobald Smith, in whose ability and devotion to the work I had, and still have, the utmost confidence. While, therefore, I marked out the lines of investigation, and kept a personal supervision over what was done, the work has been carried out by another.

"Now one of the very first results of this arrangement was the conclusion by Dr. Smith that hog cholera was caused by a motile bacterium, which certainly was a different germ from the one that I had described in 1884." (Breeder's Gazette, Nov. 11th, 1886).

The very article in which these sentences occur was referred to by Dr. Frosch, and this reference was reproduced by Dr. Peters, so there can be no excuse for either of them to plead ignorance of its contents; and yet, in spite of this plain statement, Dr. Frosch, after mentioning the article, pretends that he did not know until the publication of Dr. Smith's recent paper, the part which the latter (Smith) had taken in the work. And Dr. Peters, taking his cue from Frosch, chimes in with the same order of statements.

This is by no means all the credit that has been given. In the report of the Bureau for 1886, page 7, I said: "For the careful and accurate manner in which the experiments referred to above have been carried out, I am indebted to Dr. Theobald Smith, director of the laboratory, and to Dr. F. L. Kilborne, director of the experiment station, both of whom have shown the most commendable activity and interest in the work, and whose intelligence and zeal have enabled us to satisfactorily decide some of the most difficult questions which modern science has been called upon to elucidate." It will be noticed that although Dr. Smith came to me a young man, I had very soon made him director of the laboratory, and I recognized in my reports not only his work, but the position which he filled. This report for 1886 was the one that contained the first record of his work in connection with the disease which we call swine plague; and we therefore have the most explicit evidence that he received full credit for his work with both diseases.

In the Bureau report for 1887 and 1888, which was published in one volume, I said (page 7): "In conclusion, it affords me pleasure to acknowledge the ability, energy and devotion to work shown by Dr. Theobald Smith and Dr. F. L. Kilborne, in conducting the experimental work, the details of which are given in this report." In the Special Report on

Hog Cholera, mentioned by Dr. Peters in the quotations made above from his paper, occurs the following paragraph:

"The greater part of the detailed study of the disease, the planning of the experiments, and the bacteriological investigations, have been carried out by Dr. Theobald Smith, while the conducting of the experiments, the care of the experimental animals and the general management of the experiment station have been under the direction of Dr. F. L. Kilborne. I can only speak in the highest terms of the untiring industry and skill displayed by both of these gentlemen."

It is unnecessary for me to make further quotations to establish the fact that Dr. Peters was guilty of the most inexcusable misrepresentation and distortion of facts in what he said in reference to this matter. "You will see," he says, "that Jeffries in his paper gives Smith the credit for the work he has done." But why should he not have given him credit? Were not all the facts detailed with sufficient minuteness in the reports, as shown by the above quotations? Again, he says, "It has been no secret to me for the last year and a half as to who was actually conducting these investigations in the Bureau of Animal Industry." Why should it have been any secret to him or to any one else who consulted the reports of the Bureau as to the exact position and work of each one connected with the investigations?

There is one other paragraph in Dr. Peters' paper which I must quote and comment on in this connection. He says: "If the Bureau of Animal Industry is to be a political organization, why not have its Chief simply write the letter of transmissal of his annual report to the Secretary of Agriculture, and have a few true scientists in his employ to work unhampered and make their own reports upon the questions that they have been studying upon. This, at least, for the sake of making a more creditable appearance to other civilized nations, if we have no respect for ourselves."

This is very strong language, calculated and intended to discredit the Bureau and those connected with it, both at home and abroad. The reader will agree with me, I am sure, that it should not have been published broadcast without the

most ample evidence that the imputation which it conveys was fully justified by the facts. No one can have any excuse for being ignorant of the fact that the Bureau of Animal Industry is not a political organization. The law provides that the Chief "shall be a competent veterinary surgeon," thus taking the appointment as far as possible out of the realm of politics. The Chief has no power to make appointments or dismissals, and, consequently, there is no political work for him to do, and no excuse for his being a politician. The present Chief was appointed by the late Dr. Loring in 1884, without any political influence whatever being brought to bear, and solely because of his competency as a veterinary surgeon, and his qualifications to perform the arduous and responsible duties of the position. He has served under three administrations, two of which were Republican and one Democratic, and there has been no effort of any head of the department to displace him, or any of his scientific staff. How different this would have been if the Bureau had been in any sense a political organization.

More than this, I adopted the plan of transmitting the reports of Dr. Smith and the other scientists under my direction as soon as it appeared proper to do so. By consulting the report of the Secretary of Agriculture for 1889, page 75, it will be seen that the report of these investigations is introduced as follows: "The following brief account of the investigations, conducted under my direction, into the nature of infectious animal diseases, has been prepared by Dr. Theobald Smith, who is in charge of this branch of the work of the Bureau of Animal Industry." In the report of the Secretary of Agriculture for 1890, page 105, I have introduced Dr. Smith's report in precisely the same language as that just quoted. After this plan had been adopted by me and carried out for two years, Dr. Peters appears upon the scene and tries to convey the impression that he is the first to suggest it; that it has never been adopted, and that we are deserving of the contempt of other nations and our own people, because it has not been done.

There are other personalities in Dr. Peters' paper which

are equally unworthy of him and of the committee for which he spoke. They might be taken up one by one and shown to be just as uncalled for, just as far from the truth as those which have been considered. I will not weary your readers, however, by going further into this subject, since his whole case hangs upon the assumption that I failed to give Dr. Smith credit for his work in the investigations of swine diseases. This assumption of Dr. Peters is conclusively disproved by the quotations which I have made from my reports, and shown to be without reason or justification; and that being the case, the inferences and insinuations which he bases upon it must necessarily be taken as equally unworthy of belief.

Having disposed of the first line of attack, the personalities, let us briefly consider the second line, that is, the misrepresentations of our views on scientific questions, made for the purpose of introducing plausible arguments for strengthening the weak parts of his paper. It is simply the well-known dodge of polemical writers, generally referred to as setting up straw men for the moral effect which follows from knocking them over.

Dr. Peters quotes from the report of the Bureau for 1886, the passage which explains that we had differentiated two diseases of swine that had previously been regarded as one, and that it was consequently necessary, to prevent confusion in the future, to apply a distinctive name to each, and that, after full consideration, it had been concluded best to call the disease described in the report of 1885 "hog cholera," and that described in the report of 1886 "swine plague," and that this was the most desirable since the latter disease existed in Germany, where it was also called swine plague (*schweineseuche*). These reasons certainly appear to me to be sufficient for our course, and the man who sees a hidden intent on our part to cause confusion instead of preventing it, must have an extremely suspicious nature. And yet the doctor seriously states that the following questions propound themselves to him after reading our explanation.

"After speaking of the disease as swine plague for several

years" (one year, to be exact.—D. E. S.) "did the Chief of the Bureau of Animal Industry call Billings' swine plague 'hog cholera' for the sake of creating confusion?" If Dr. Peters will refresh his memory as to the literature of the subject, he will find that Dr. Billings' report on swine plague did not appear until June 30, 1888, or a year and a half after the report of the Bureau that he quotes from was written, and that we could not have known in advance what his position would be, or what name he would apply to either disease. In his newspaper articles Dr. Billings asserted most positively that the germ he had found was identical with that described as causing German swine plague (*schweine-seuche*), and he repeats this in his report (1888) and goes so far as to say (page 136) that "Mr. Salmon's specific 'hog cholera microbe' was missed, and it 'ever will be missed' in the American swine plague, no matter who seeks it, or how much time they may spend in the hunt."

If Billings had been right in this, and his subsequent course had been consistent, there would have been no confusion, for the German swine plague, the swine plague of the Bureau and Billings' swine plague would have been caused by identical germs, and there would have been no confusion in classing the three together as one disease, or as variations of one disease. As far as could be seen, therefore, from the literature at hand at the time our report was written, our nomenclature was calculated to avoid any confusion, even with Billings' writings. We could scarcely be expected to foresee that Billings would discard his swine plague germ (which he asserted was identical in its "micro-morpho-biological phases" (report, pages 113, 114) with the germs of "wild-seuche," hen cholera and rabbit septicæmia), and come to the front with an entirely different microbe as the cause of his swine plague. This other microbe is the hog cholera microbe of the Bureau, as Peters sufficiently shows, and it is the germ which Billings, up to 1889, asserted had no existence. If, therefore, confusion has been the result, the Bureau of Animal Industry is not responsible for it.

"If the name 'hog cholera' was not used in the place of

swine plague for the purpose of creating confusion," says Dr. Peters, "why was a septic pneumonia of the pig termed 'swine plague' unless for the purpose of causing further confusion? When, as we have seen, the disease is not confined to swine, but a little careless [careful?] study would have shown that the pigs could easily communicate it in other species of animals." As we have already explained, we called the American disease swine plague partly because an apparently identical disease in Germany, caused by an apparently identical germ, was known the world over as swine plague. That disease in Germany was described by competent men, and was accepted by practically the whole scientific world as properly described and named. If our disease is a septic pneumonia, the German swine plague is a septic pneumonia; if our disease is communicable to other species of animals, the same has been recognized as true of the German swine plague. And yet no scientist has attacked Loeffler or Schutz as being guilty of any impropriety in calling their disease swine plague. It has been reserved for Dr. Peters to make the discovery that it is a gross error to name a septic disease of pigs communicable to other animals swine plague; but why does he confine his remarks to the Bureau of Animal Industry, when we were following the example of the distinguished European scientists to whom reference has just been made?

Dr. Peters says: "I think that Jeffries' work is particularly accurate and very valuable, and am surprised that it has not attracted a great deal of attention, although it does not appear to have done so." I am ready to agree that Jeffries' paper was a valuable and timely contribution to the literature of swine diseases, but how does it happen that Dr. Peters, while so mercilessly criticising the work of the Bureau and praising the work of Dr. Billings, fails to point out that Jeffries absolutely disproves Billings' assertions that (1) the germ of the American hog cholera is identical with that of the German swine plague; that (2) the germ of hog cholera described by us in 1885 does not exist; that (3) there is only one communicable disease of swine in the United States, and that (4) a disease identical with the German swine plague does not

exist here? In his position on each of these important questions, Jeffries fully confirms the work of this Bureau, yet Peters has not a word to say to that effect!

To show the superiority of the work of investigators outside of the Bureau, Dr. Peters says: "Dr. Billings boldly announces that he found his germ of swine plague in July, 1886, among the first pigs that he examined in Nebraska which had died of the disease." It should be remembered in this connection that Dr. Billings had the advantage of our report in which we had described the germ of hog cholera, how to obtain and cultivate it, and its effects when inoculated in the smaller animals. All he had to do was to follow the methods we described in order to obtain the germ from the first hog he examined which was affected with the disease. But Billings has boldly announced a great many discoveries that have not fulfilled the expectations of himself or his friends. If he really discovered in July, 1886, the germ which he now produces as the cause of his swine plague, how does it happen that for two years afterwards he claimed that that germ had no existence? How does it happen that he asserted so positively the morphological and biological identity of the germ he then had with the *schweine-seuche* germ of Germany? How does it happen that the first germs he sent abroad were not the same as our hog cholera germ or his present swine plague germ (Dr. E. Bunzl-Federn, *Archiv. f. Hygiene*, XII., 1891, p. 198)? If these questions were satisfactorily answered we would be more disposed to admit the plausibility of Dr. Billings' bold announcement.

With the personalities and misrepresentations out of the way the only statements I find remaining in Dr. Peters' paper in the nature of a serious criticism are contained in the following sentences: "The so-called swine plague of the Bureau of Animal Industry is one of those septic diseases due to filth, and is seen chiefly where putrefying city swill is fed; and farmers around Boston find that if the swill is boiled and then fed, before there is time for putrefactive process to commence again, they are not troubled with it. In this respect it resembles closely the German *schweine-seuche*. If this be a true swine plague, make the most of it."

The objection to Dr. Peters' view, as stated here, is that it is too sweeping and dogmatic. His experience, however, has been limited to a few outbreaks among hogs in the vicinity of Boston, which were chiefly fed on swill. From this limited experience with hogs kept under one set of conditions, he wishes to generalize his conclusions and make them apply to hogs in all parts of the United States, and fed upon all sorts of food. And he is so intolerant towards the investigators of the Bureau that because their observations do not agree entirely with the conclusions which he has reached, he brands them as dishonest and unworthy of credence. In doing this he departs from the methods and traditions of true scientists, and injures his own reputation more than he does the reputations of those whom he attacks. Whether the disease which we have called swine plague is a true plague or not depends upon the extent of territory over which it occurs, and the amount of losses from it. This disease has so far been found in Massachusetts, New Jersey, Maryland, District of Columbia, Kentucky, Illinois and Iowa, as well as in Germany, so there is a certainty of its being widely distributed. The exact losses from it are, of course, unknown, but we have been satisfied from our investigations that they are sufficiently large to fully justify the name applied to it. Much more evidence has been accumulated to show its destructiveness here than exists in regard to it in Germany, and as has already been stated, the propriety of the name has not been questioned there.

A public official should not be unduly sensitive to criticism, nor object to it when it is reasonable and fair. But Dr. Peters has gone beyond this, attacking the honor and credibility of every scientist connected with the Bureau; his paper, going to those ignorant of the facts, is calculated to bring reproach upon our Department of Agriculture, our scientists, our institutions, and our country. The natural consequence of such documents is to retard the progress of science, to make farmers suspicious that the funds appropriated for investigations in their behalf have not been judiciously expended, and to make it more difficult to obtain appropriations for

such purposes. The Bureau of Animal Industry has employed more veterinarians, and has done more for the veterinary profession than any other institution or department of the government, and yet this man, representing for the time the profession, seized his opportunity to do what he could to cripple this Bureau. And when we examine his case, as we have just done in the light of recorded evidence, we find his argument can be characterized by the single word—misrepresentation. Condemning personalities, political methods and lack of honesty in others, he, in the same paper, makes himself liable to all of these charges.

In concluding, the writer calls upon the members of the United States Veterinary Medical Association to give this matter special consideration, to compare the quotations which he has made with the original documents, and to decide whether their body is to be made the medium for circulating such statements as are contained in this committee's report, or whether it will insist on carrying out the objects for which it was established, viz.: The promotion of harmony and good fellowship, the advancement of the profession, and the encouragement of honest and conscientious scientific research.

STERILITY OF MARES.

BY M. E. KNOWLES, V.S., Terre Haute, Indiana.

Sterility of the mare and cow has attracted the attention of breeders in particular, and veterinarians in a mild sort of way, for years.

There have been many instruments invented and proposed for the cure of sterility, without a single suggestion as to the probable cause, other than ridged cervix—"contracted os."

I will not offer suggestions as to the merits of the different impregnators and nostrums offered to the breeder for the positive cure of sterility, but leave this for your individual opinion.

To my knowledge, no veterinarian has described any of the most frequent causes of temporary sterility, and it is with much hesitation that I now attempt it.

I assume that all are acquainted with the anatomical relations and physiological process of procreation, and will go directly to one of the most frequent causes of temporary sterility.

There is a popular idea that the semen is ejaculated directly through the cervical canal into the uterus, and without this conception cannot occur.

This is a physiological impossibility, and if it ever occurs is purely by accident and due to an extremely flaccid cervix with a uterus ballooned with air.

To disprove this popular theory, during the breeding season of 1887, through the kindness of Mr. M——, I conducted a series of experiments on seven brood mares in the following manner: A few moments before copulation in each mare the vaginal speculum was introduced, cervix secured with a vulcellum forceps and a rubber band then tightly drawn about the body of the cervix; a stallion served the mares in from ten to fifteen minutes after the application of rubber band; ten minutes later the band was removed by introduction of the hand, and in five of the seven cases, conception followed the first service, one was served twice and one three times before conception occurred, but at each service the elastic band was tightly applied.

Perhaps a more interesting and convincing proof of the absurdity of the intra-uterine-semen-injection hypothesis may be seen in the following: In June of 1888 a mare aged four years, thirteen and a half hands, was presented to a large standard bred stallion for service. The horse after two ineffectual attempts to complete the sexual act, refused to again mount the mare, although the penis entered about half way each time. I was called a few hours later to see her on account of apparent colic, with which she had suffered since the attempted copulation. On introducing the vaginal speculum the cervix was found intensely hyperæmic, evidently from contusion with glans penis. On measurement, the vagina was only eleven inches in length from labium majora. This shortness of the vagina readily accounted for the inability of the horse to complete sexual congress and the cervical hyperæmia.

This mare being of some value on account of "blood lines," the owner was anxious to have her in foal, and to accomplish that end I suggested that the horse be permitted to serve another mare during the following œstrum of his mare and that I be allowed to transfer the semen by mechanical means to the mare in question: during the following month this was accomplished, the mare conceived and completed a successful gestation.

In this instance the semen was transferred with a curette, the temperature being maintained through the medium of hot water.

From the above mentioned and other experiments, I am led to the following conclusions: First, in a perfect physiological condition of the mare, the zoosperms reach the cavity of the uterus by their own movement; Second, the least pathological condition may, and often does, obstruct the movement of the zoosperms, thereby preventing their entrance into the uterus; and further, that certain secretions, the products of pathological conditions, destroy the vitality of zoosperms, thereby preventing their passage through the vagina and cervical canal, and should they reach the uterus they there encounter pathogenic secretions that destroy them.

Sub-acute and chronic cervical hyperæmia are probably the most frequent and fruitful causes of temporary sterility, due in an astonishing large number of instances to continually recurring abortions. By recurring abortions, I mean that the abortion occurs regularly after each conception within from twenty-one to sixty days, and this fact is common to both mares and cows, but on account of the very small foetus, escapes the notice of the attendant, even if it passes onto a clean floor, which is rarely the case.

Suspecting the above facts several years ago 1886 I commenced to obtain information relative thereto, by making careful enquiry of all intelligent breeders of my acquaintance; I soon found, however, that not one of them even suspected such an event.

Mr. McK——, a very intelligent breeder of cattle, had at this time two cows that were continually being bred at an

interval of about two months, which he very kindly offered me for observation. He gave the date of the last service of each, and ten days from these dates I commenced daily making two examinations by speculum of each cow. On the morning of the twenty-ninth day from date of service in number one, I found in her vagina a twenty-nine-day-old foetus. In cow number two, on the morning of the forty-third day, the attendant by "some peculiar circumstance" found a forty-three-day-old foetus behind her, which he presented to me on my arrival at the farm. During this and the following year it was my fortune to make the same observations on twelve brood mares from different farms, with the result of positively finding the infinitesimal foetus in the vagina of nine of the twelve, from twenty-one to sixty-seven days old.

In the remaining three the foetus escaped me, but the condition of the cervix and intra uterine necrosa pointed plainly to the fact of abortion having occurred.

I will not venture an opinion as to the probable cause of the primary abortion, lest it should be due to complete or patchy hyperæmia of the endometrium or cervix—the conditions most frequently found existing subsequent to the abortion, and in mares not known to have aborted.

The condition of acute cervical hyperæmia will be easily recognized on introducing the vaginal speculum; the cervix and frequently the adjacent vaginal mucous membrane will be engorged, vessels distended and the cervical folds thicker than in health, glued together by a thick mucous or mucopurulent discharge, which is rather scant.

The thickening of cervical folds at this time is evidently due to blood infiltration, but should the hyperæmia continue for some days the cervical connective tissue becomes infiltrated with serum, the folds oedematous, in which condition it remains for some days longer, when the exudation may become plastic; there sometimes seems to be a local lymphangitis, and occasionally, when this occurs, from the interference in circulation, or possibly blocking of lymph vessels, there is occurring local circumscribed necrosis of cervical mucous membrane, leaving an ulcer or ulcers that heal tardily.

The subject of vaginal and cervical ulcer will be considered in a later paper, when I shall attempt to consider cervical hyperæmia in a more extended manner.

Cervical hyperæmia is usually only a temporary cause of sterility, and is from change of surroundings and climate; but more frequently from keeping the mare away from the stallion during three or four rutting periods, relieved, and on subsequent service the mare conceives, and should there be no pathological condition remaining, accomplishes a successful gestation.

This desired event can, however, be by the veterinarian's assistance hastened in many instances. The treatment must be governed by indications alone. Hot or cold vaginal irrigations, with the addition of from five to fifteen per cent. boracic acid; tamponing cervix with heated boracic acid, &c.

When there is intense hyperæmia, I have found tamponing the cervix with a large pad of absorbent cotton, shaped to fit the cul-de-sac and completely enveloping the cervix, to be of material benefit, promptly relieving the hyperæmia by depletion. This tampon should have a string attached by which the attendant may remove it in from five to eight hours after insertion.

Where it is necessary to adopt this method, I follow the tampon for several days with a warm boracic acid water vaginal injection, employing usually from two to four gallons of water at a temperature of about 100° F.

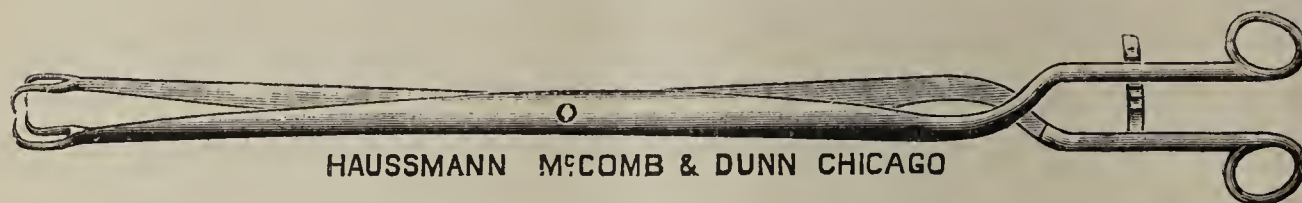
In chronic hyperæmia, accompanied by cellular changes, and an organized exudate, painting the cervix once or twice weekly with comp. tr. iodine, followed with daily hot vaginal irrigations, has in my hands been productive of much good.

There is much in an examination properly made, and perhaps it may not be untimely for me to call your attention to the accompanying cuts of some gynæcological instruments, necessary for all veterinarians in breeding districts, that are desirous of seeing "per vagina" what there is in this direction. The instruments shown are necessary for the successful practice of gynæcology. These instruments are very nicely and lightly made by Haussmann & McComb of Chica-

CURETTE.

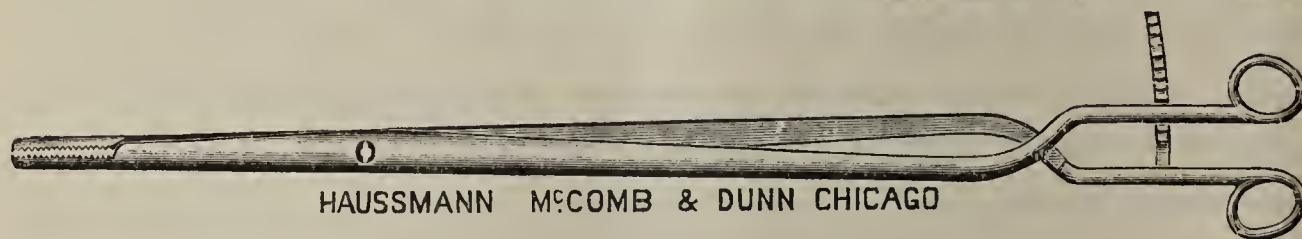


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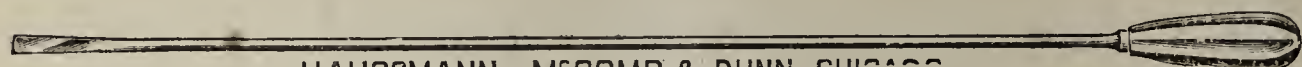
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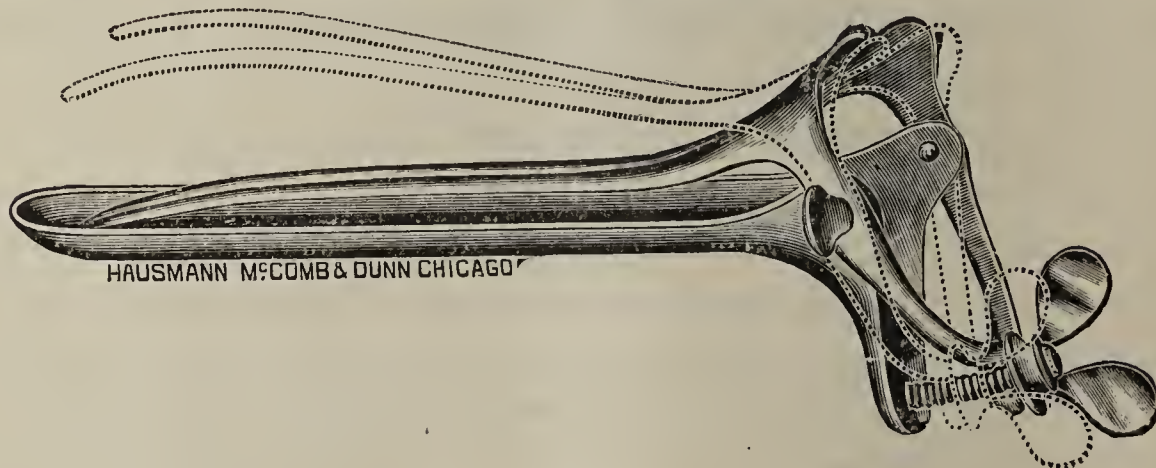
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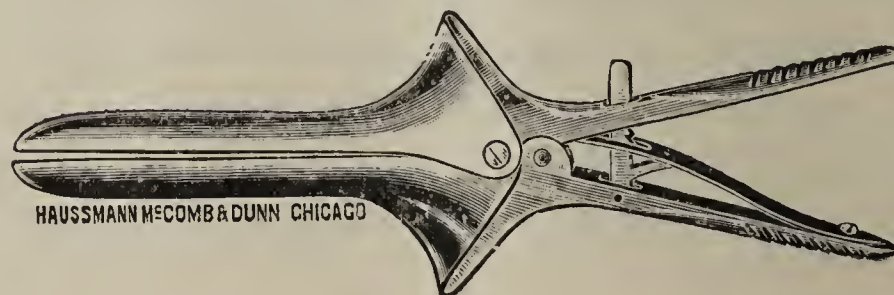
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VAGINAL SPECULUM.



HAUSSMANN McCOMB & DUNN CHICAGO

CERVICAL SPECULUM.



HAUSSMANN McCOMB & DUNN CHICAGO

go, who have by my direction succeeded in getting all, but most especially the vaginal speculum, so light and convenient that its introduction and retention is borne without inconvenience by the most nervous of mares.

The cervical speculum is used for intra-uterine examinations and should be introduced before the vaginal.

The method of introducing the cervical speculum is as follows: the hand and arm well oiled is introduced and the cervix dilated, then thoroughly oil the speculum, introduce, and, by depressing the handles open the valves to a convenient width; now introduce the vaginal speculum, having the mare in a convenient sunlight and the wide, brightly polished single valve will reflect ample light into the uterus for ordinary examinations; should, however, a more minute examination be required, resort must be had to a small electric light of three or four candle power, (power furnished by a portable storage battery), which can be carried into the uterus with the applicator or applicator forceps.

For the purpose of facilitating the reflection of sunlight into the uterus it will be necessary to manipulate the cervical with the end of the vaginal speculum to the desired angle; this can, however, be more satisfactorily accomplished by securing the cervical speculum in the vulcellum forceps, thereby allowing perfect liberty of the vaginal speculum, consequently better light reflection.

As time may permit, I will acquaint you with some other causes of sterility, some of them very rare and interesting, and report some cases treated during the last year.

TETANUS.

By G. Z. BARNES, D.V.M., Pekin, Ills.

(A Paper read before the Illinois Veterinary Medical Association.)

Tetanus may be defined as an extra-organismal infectious disease, characterized by a spasmodic contraction of the voluntary muscles, with tension and rigidity of the parts affected.

According to Williams, "as a generic term it comprehends

all the varieties, but when not used in this sense, it implies that the disease involves all classes of muscles equally. When the muscles of mastication are alone involved, it is called *trismus*; when it chiefly affects the superior cervical and dorsal muscles, causing the head to be elevated and the spine curved downwards, it is called *opisthotonos*; when the muscles of one side are affected it is called *tetanus lateralis*."

I believe, for all practical and scientific purposes, tetanus should be classed into two varieties: acute, and sub-acute, or chronic.

Acute tetanus is in my experience always due to some traumatic injury, though it might occur from idiopathic causes.

The symptoms of the acute form are always well defined. There is usually a difficulty in chewing and swallowing, stiffness of the neck and limbs, tail elevated, protrusion over the inner part of the eye of the membrana nictitans, manifested on the least disturbance, and marked nervous excitability. Temperature and pulse not much affected at the beginning of the attack, but in the acute form as the disease progresses a marked increase in temperature is noted, and the pulse becomes quick and hard when the spasm affects the muscles of the heart, or rapid and feeble when it relaxes. All the symptoms in the acute form become rapidly aggravated until the jaws are completely locked, all the muscles are rigid in a state of tonic spasm, a cold perspiration breaks out on the body, and if the animal be suddenly disturbed the superficial muscles will be seen to twitch and tremble. Death usually takes place in from one to five days, either by complication of the pulmonary structures, asphyxia; from exhaustion, as a result of protracted and severe muscular rigidity and frequency of convulsive attacks; or from hyperpyrexia, associated with an elevation of temperature to such a degree that the organic functions of the heart and lungs are impaired and finally cease.

The sub-acute or chronic form differs from the acute in that the symptoms of the attack are more insidious and less marked, although nearly all are observed; in some, however,

the jaws do not lock. Usually they do about the ninth day, remaining so from two to ten days, after which they gradually regain their normal function. All the symptoms may gradually increase in severity for a period of ten days, and then gradually diminish under judicious treatment, or they may reach that stage when all the symptoms of acute tetanus become developed, and death take place the same as in the acute form.

Ætiologically the disease is now generally considered to be due to a specific micro-organism, a pin or brush-shaped bacillus which bears the name of "the germ of Nicolaier," discovered by him in 1884. Doubt may still exist as to whether one single germ is invariably the actual cause of tetanus, and the exact nature of the disease cannot yet be considered as positively known; yet its infectious character is now conclusively settled. The results accomplished in the last few years have established beyond reasonable contradiction, not only the fact that the disease may be produced by inoculation into animals of pure cultures of the germ of tetanus, but that tetanus is clearly a microbic disease, with the germ of Nicolaier as its essential or primary cause.

To Kitasato, a Japanese student in Dr. Koch's laboratory, great credit is due, since he not only first isolated the germ, and with pure cultures produced the disease in animals, but also established the identity of the soil bacillus and that obtained from the wound of a horse suffering with the disease.

One of the most interesting articles on tetanus is that of Dr. Theo. Kitt, of Munich. In one of his experiments a portion of the dried pus obtained from an abscess in the hoof of a horse which had died of tetanus, was ten times diluted with sterilized water, and two cubic centimetres ($32\frac{1}{2}$ minims) injected subcutaneously into the neck of a horse. From September 21st to October 9th the horse remained apparently well, then symptoms of tetanus came on, the animal grew rapidly worse and died at midnight, October 10th. "The symptoms were those of tetanus in horses, notably the peculiar facial expression and the dilation of the nostrils."

As the horse was old and worn-out, and the disease ran

such an acute course, it was thought necessary to have more proof that the horse had succumbed to inoculation tetanus and nothing else.

Autopsy made October 7th. No special organic lesions were found, but from the area of the diffused redness under the point of inoculation some liquid was collected with an aseptic instrument, and nine white mice were each inoculated in the subcutaneous tissue of the hip, with an amount of material varying from one-eighth to one quarter of a grain. All had tetanus by the 14th, and all died. Kitt concludes in his paper that tetanus in the horse is caused by a bacillus, identical with and resembling that of human and soil tetanus.

Another interesting contribution to the subject of tetanus is that of Dr. Bassano, whose elaborate work in the examination of various soils for the presence of Nicolaier's germ has attracted considerable attention. He secured soil from forty-three different countries from many parts of the world. The earth of twenty-seven countries gave positive results.

The observations of Dr. Sormani on the action of gastric and intestinal secretions on the bacillus of tetanus deserve mention. He caused herbivorous and carnivorous animals to swallow pure cultures of the bacillus. His conclusions are, First, the flesh of animals that have died of tetanus can be eaten with impunity. Second, the microbe of tetanus can pass through the alimentary canal of herbivorous and carnivorous animals without causing any symptoms. Third, the digestive secretions of these animals neither kill nor alter in any way the bacillus of tetanus. Fourth, an animal can introduce into its stomach, with impunity, a dose of tetanic virus two thousand times greater than that which is sufficient to kill if injected subcutaneously.

Koch's laboratory has been giving tetanus a liberal share of its attention. From one of their reports it appears that Drs. Behring and Ketasito have made positive advances toward the production of immunity against tetanus. These two observers have been engaged for some time in a study of the nature of diphtheria and tetanus, and they have at last succeeded in not only conferring immunity in animals against

attacks of either disease, but also in arresting it after it has already set in. This surely is suggestive and encouraging. Though the nature of the material used by Behring and Ketasito has not yet been published, it is strongly probable that it is of animal origin, and perhaps bears relationship to the already far famed anti-tubercular lymph given to the world from the same laboratory. From the various articles we were able to get on this subject, we believe we are safe in arriving at the following conclusions:

First, tetanus is a specific infectious disease. Second, outside of the diseased organism the specific germ may develop in the soil. Third, in addition it may exist at different points, on the coats of horses or other animals, in the dust of hay, surgeons' instruments, etc. Fourth, these different situations (soil, dust, horse, etc.) constitute a closed cycle, from any element of which the bacillus may constantly or indefinitely emigrate, so that it is not possible to designate the point of initial departure. Fifth, the horse plays in this transmission no greater role than cattle in the propagation of tuberculosis.

As to the treatment of tetanus we have nothing particularly new to offer. Unfortunately the disease is well under way before a veterinarian is called. In acute tetanus from traumatic injury, local treatment, to be of any service, must be soon after the injury has been inflicted, before the symptoms have become marked. Poultices and fomentation should be applied to the injured part. I can see no benefit to be derived from such heroic treatment as ripping open a cicatrix, burning a hole into a horse's foot, etc., etc., but believe we should aim to relieve irritation that has induced the tetanic condition so far as possible, and support the patient's strength so as to enable him to hold up against the disease.

Nothing has been more unsatisfactory to me than the treatment of the acute form of traumatic tetanus. I have yet to learn the drug or combination of drugs that has any merit as a curative agent. Many serve as palliatives, and afford some temporary relief to the patient, and much may be done by the surgeon by removing all sources of external irritation to mitigate his sufferings. In the acute form, I have not found

slinging a more favorable condition for him to withstand the torture or lessen the spasms than out of it. A cathartic of aloes is recommended by all veterinary writers, but I can't say that I believe it to be of any particular merit, because while it clears the bowels, it is to a certain extent a depletive. I am of the opinion that when the progress of the disease reaches that state where spasm of the involuntary muscles is observed, that the case is hopeless. Neither do I believe anything is accomplished by the attempted introduction of food per rectum.

Nearly all the drugs of the pharmacopœia have been advocated and tried for tetanus, but I am of the opinion that in the sub-acute or chronic form (the only form admitting of treatment) more may be accomplished by simple than specific treatment. Although I generally prescribe gelsemium and cannabis indica, alternating with large doses of Fowler's solution of arsenic, I am firmly of the belief that simple treatment is the much more rational method to employ, rather than the vain hope of finding a specific, to be constantly recurring to antispasmodics and sedatives, which repeated experience has proven to be useless as curative agents.

Experiments have been made and nitrate of silver has been found to be a powerful agent in the destruction of the bacillus of tetanus, hence its therapeutic value in treating wounds where there is a possibility of tetanus following. Dr. Sarmani recommends iodoform as a wound dressing in this disease, claiming that it neutralizes perfectly the poison of tetanus.

FOUR CASES FROM A NOTE-BOOK.

By J. F. WINCHESTER, D.V.S., Lawrence, Mass.

(Paper read before the Massachusetts Veterinary Association, Oct. 28th, 1891).

PERITONITIS AND DEATH AS A RESULT OF RUPTURE OF THE EXTERNAL COAT OF THE STOMACH.

HISTORY.—Animal sick all night with colic. Called to see the horse in morning; found animal down, pulseless, cold

sweat, and diagnosed peritonitis, with the prognosis of death within a short time.

Post-mortem twenty-four hours after death. Black roan gelding. Tympanitis well marked. Removed the abdominal muscles, found peritoneum dark in color, blood vessels well dilated, and a large amount of straw-colored serum in abdominal cavity. The large and small colon were normal in color with the exception of a slight light red blush, which was also found on the small intestines.

The stomach was distended, and had a rupture of the external coat along the large curvature for nearly two feet. The muscular fibers of the middle coat were separated and well defined. The rest of viscera normal.

RABIES.

About July 10th, 1890, a bull terrier, owned in Boston, was bitten by a dog that was running amuck through the highway. The bite was not a severe one, and no special notice was taken of it; but the owner asked me within a few days what was the chance of his dog becoming rabid.

The result of the opinion I expressed was that the animal was placed under close confinement for a period of about three months, when, as he remained in an apparently normal condition, the restrictions were removed.

Nothing was observed abnormal until the middle of May, 1891, when on the 17th he was excitable and irritable, and bit a dog that had been his companion for some time. The wound was made over the eye, and had the appearance of being made with one tooth. As a result of that he was again chained in the hay-loft, and then began a series of symptoms that would cease only from exhaustion, or the presence of the groom—barking, tearing anything within reach, breaking windows and sash, and he at one time broke his chain. When approached by the groom he would stop and crouch, with only quick breathing to be noticed. This condition lasted three days, and he was found dead one morning.

POST-MORTEM.—Rigor mortis well marked. The abdominal viscera normal with the exception of the contents of the

stomach, which consisted of foreign matter. The organs in thoracic cavity normal. The blood vessels under the pia mater in the convolutions of the brain were congested, and also the plexi in the three ventricles.

The dog that was bitten May 17th died June 12th, having been sick a few days, and the owner told me he had the same actions as the dog that bit him. Prescribed during his sickness.

PERITONITIS AND ABNORMAL SPLEEN.

October 1st, castrated chestnut colt seventeen months old. The manipulation easy and soon over. Colt got up all right, no bleeding, put in box-stall, tied up, given hay to eat.

October 3d. Visited the colt. He was bright, active, good appetite, full of life, and it required some tact to open the scrotum, which was done, and the usual amount of serum was found.

October 12th. Was called and found colt dead at noon.

HISTORY.—Saturday, the 10th, he was apparently all right, eating well and in good spirits, not any unusual degree of swelling of scrotum, the openings discharging well. Sunday, the 11th, did not feel well, but ate until evening. No marked pain, but his head was down and dull. Monday, the 12th, up and down during the morning, but no pawing or acute pain, and at noon he died without a struggle.

POST-MORTEM.—Chestnut gelding, seventeen months old. Not bloated, body warm, well marked rigor mortis, scrotum some swollen, holes open and discharging apparently normal pus. Removing abdominal muscles, found the peritoneum inflamed, and opening the same, serum poured out copiously. The small colon was blushed light red in color, the same with the large colon. The small intestines were very red, of deep carmine color, and peritoneum dark red, and the blood vessels in the peritoneum were filled and well defined.

On the right side and under the stomach found an organ shaped like the spleen, weighing about three pounds, dark blue in color, spongy texture; the capsule on side next stomach ruptured and covered with coagulated fibrin,

On left side and underneath, (on top as animal was on its back), found a spleen weighing about two pounds, normal in shape, color and texture. The rest of viscera apparently normal.

FISTULA OF STENO'S DUCT.

Last spring the owner of the horse in question noticed that the animal did not take the bit as kindly as had been his habit, and acted as if his mouth was sore. Within a short time the horse was brought to me, and an examination of the buccal cavity disclosed that the third upper molar was diseased, and the outside edges were very pointed; this condition was remedied, and the animal returned to work with apparent relief.

Two or three weeks after this the owner noticed an enlargement on the left side under the jaw bone, which gradually increased in size until it broke, and a continual stream of clear, thin fluid escaped. This condition the owner tried in vain to control for about three weeks, and then the animal was again brought to my notice. At once recognizing the trouble, I began to look for the cause, and examining the mouth, found that the mucous membrane on the left side of the mouth opposite the third upper molar was corrugated and inflamed. Thinking that the cause of the trouble might originate there, I tried to pass a catheter while the animal was standing, but failed to accomplish the feat. Sent the horse home, and had him prepared for casting, and the next day he was cast, and the catheter was passed into the duct down as far as where it runs under the bone, and then the animal was allowed to get up.

The opening under the jaw was kept clean, and a strong solution of carbolic acid applied to the part several times a day. The result of this was that the discharge stopped after a short time, and, at time of writing the animal is apparently all right, with the exception that the course of the duct is well defined back to the gland.

A CASE OF SPRINGHALT.

By W. BRYDEN, V.S., Boston, Mass.

(A Paper read before the Massachusetts Veterinary Association, Nov. 25, 1891.)

About the 1st of June, 1891, I received a letter from Dr. Howard, President of the Massachusetts Veterinary Association, inviting me with other veterinarians to call at the wharf of the N. Ward Company, and see a remarkable case of springhalt. It was intended to kill the subject within a few days, and send the spinal cord to Worcester to be examined at the Clark University there. The invitation was accepted, and the case carefully examined.

He was a small, black pony, about fourteen hands high and twenty years old, apparently well enough with the exception of his hind legs, which were badly affected with springhalt, both legs being nearly, if not quite, alike. In viewing him from behind, the crests of the ilium were about even, the gluteals both alike flat, the hips drooping, and the sacrum and tail elevated and coarse; the muscles superior to the stifle were somewhat wasted, and muscles behind the tibia were small and felt like tendons to within two or three inches of their origin; the hocks were both coarse, but not more than ought to be expected under the circumstances, his age and the way he had been used for a long time, having tended to produce changes; both had a small elevation, or slight coarseness, at the seat of bone spavin. The legs afterwards became swollen below the hock, from the fact that the stall in which he stood part of the time, although at least five feet wide, was not wide enough to enable him to walk into it, and when once in if he attempted to move, which was very frequently, he struck the outside of his ankles with such force against the sides of the stall that they became swollen, bruised and sore.

The parts that attracted my attention most, however, were his hoofs. They had evidently been causing the creature trouble for a long time, and were both alike, or nearly so. They were smaller than nature intended them to be, and

nearly round, the wall short, the sole low, the bars strong, the heels short, and the frog of medium size. The horn seemed fairly healthy, but it grasped the extremity like a vise, causing him such uneasiness that often during the night he would dance about for several minutes at a time, making it difficult to enter the stall or go near him. Indeed, his attempts at locomotion were ludicrous, and he threw himself down several times and yelled either from pain, fright, or irritation, due probably to some form of neuritis or neurosis.

I wrote to Dr. Howard, through Dr. Austin Peters, the Secretary of the Massachusetts Veterinary Association, stating that I had seen the animal, and that having treated such cases, though never one so bad, I could demonstrate that the primary trouble was not in the spinal cord, which had very little seriously wrong with it, but in the feet. I also offered to take one leg, any one else who had a theory of his own or others on the subject taking the other. Nobody wanted it, however, so the case was kindly turned over to me, and on June 9th, 1891, I commenced treatment as follows:

A horseshoer, with a sharp knife and rasp, was secured. The foot when lifted was held with great difficulty. The wall was thinned with the rasp all it would bear as high as the coronet. The sole was next leveled; the inside wall, both from the fact that he toed out and his stamping his foot with great violence on the inner half, was low. The soles were carefully trimmed; the commissures pared out; the bars thinned, and the heels opened. This greatly relieved the crowded structures within, and removed the mechanical pressure and interference with the blood vessels and nerves of the extremity. He was then left in charge of Mr. Andrew Ward, who took great interest in the case, furnishing keep and faithful attendants who had orders to keep his feet continually in poultices. For two or three days he tolerated this treatment, and improved at least fifty per cent.; but from his own efforts to get the poultices off, or from the bags being tied too tight, his pasterns became badly corded and so sore that he became almost unmanageable. Nothing further could be accomplished until these sores were healed. This was followed by a slight

blister of bin iodide of mercury ointment, applied above the coronet, which took three weeks to heal, during which time he was worse, if possible, than at the beginning. The blister was a mistake.

I then had him stand in mud during the day, and at night ordered his feet to be wrapped in long bandages soaked in lime water, linseed oil and soft potash soap, to which was added a little carbolic acid. These were neatly put on the hoofs in figure eight fashion, and kept soaked with the preparation. He tolerated this treatment and began to improve very rapidly, and on the day he was destroyed, July 27th, from two to three weeks after I had stopped treatment, he was able to trot off after two or three twitches, on starting a quite natural gait, both on a straight course and in turning, something he was unable to do before being treated.

So far as I am aware, this discovery was made by my father over thirty years ago in Northern Vermont, where our family settled on arriving in this country from Scotland, and where we remained for six years before removing to Boston in 1861. He was led to it by observing the large number of colts every spring with defective hoofs and legs, which he attributed mainly to the restraints and idleness incident to domestication and the want of tear and wear to the hoofs during the long winter months, especially while the animals were growing. Many have treated the hoofs for defects and diseases of the feet, but no one before had ever grasped the grand conception that they dominated and determined the character of the limbs, and influenced the conformation of the body, too. On my graduation from the Montreal Veterinary College in 1871, I took up at his request the study of the subject and submitted to *The Veterinarian* at least two short articles on springhalt and other diseases peculiar to horses' limbs, and which I maintained were caused by defective conditions of their hoofs; the first in 1873, I think, the second in July, 1875. Since then I have contributed to about all of the veterinary journals published in Great Britain and America articles relating to animal locomotion and veterinary orthopedics, among which springhalt was always included.

There are several modifications of springhalt. This case presented features somewhat similar to what are sometimes seen in connection with bad forms of scratches, although when I first saw him and up to the time when the poultice strings hurt him, and he was placed in the narrow stall, there was no abrasion or evidence of soreness or inflammation of the skin. In other respects it showed all the symptoms of ordinary chronic springhalt.

In previous articles on this subject I have pointed out that the successful treatment of this disease depends on whether it first presents itself in a very young animal, or in one that has reached maturity. The young animal, affected with it from early youth, if allowed to grow up without any effort to arrest or control the defect, will be found the most difficult to treat successfully after maturity, as inharmonies in the different parts of the leg are not easily regulated; whereas springhalt occurring at maturity or after, if not the result of a permanent injury, is very often quite as amenable to treatment as other erratic or equivocal gaits, such as paddling, interfering, over-reaching, hitching, pacing, etc., defects attributable to a similar class of circumstances and surroundings, and composing a family of diseases that have no relationship whatever to chorea, or other diseases originating in the brain or spinal cord.

Whatever part the hoof crowds in or interferes with will react on some part of the limb above, causing changes, it may be in one or more muscles or parts, so that they act out in harmony. It may disturb a nerve and destroy or modify its influence, changing the gait, or causing lameness. It may cause shortening of such parts as the flexor tendons and ligaments, and the animal walks on his toe, or on the side of the foot. It may induce shortening of the metatarsal flexor and cause it to do more than its share of work, when bone spavin will follow. It may cause shortening and atrophy of the muscle of the hip, and the tail will almost invariably be carried to the shrunk side, instead of the side on which the muscles are strongest. All those diseases of the limbs recognized as peculiar to the horse have their origin there. There we find

the predisposing factor. The acquired defective hoof determines the character of the defect in the limb. Gen. Grant, in his letter to Dunbar, endorsed this significance of the influence exerted by the hoof.

A springhalt gait from any other cause is not springhalt. To class it with chorea, or to imagine it due to changes in the bones of the hock is nonsense. The changes in the hock and elsewhere are coincident; results, not causes.

Let members of the veterinary profession take up this great study of veterinary orthopedics, animal locomotion and organization—pedospedics, as Mr. Hubbell has named it—or by whatever name we finally decide to call the study, instead of all rushing into specialties in bacteriology, etc., and depend upon it a domain containing treasures of such richness and such interest will be found, that if known more perfectly now might have made the recent grand achievements of Sunol, Palo Alto, Allerton and Nelson several seconds faster. This is the science that is not only to save our phenomenal two-year-olds from decrepitude at five, but that is to make it possible for them to rival their early achievements when three times five.

Among our great horsemen a few have seemed to appreciate the importance of this glorious subject, more have tried to explain it, but none with the comprehensiveness to which it is entitled. The veterinary profession still has an opportunity to demonstrate the richness of some of the gems it contains. It ought to be one of the most important "chairs" in our veterinary educational institutions, and one that many among our influential people would delight in assisting to endow. Let us do original work here, and not look to France and Germany for everything new. Let us begin now, before some one has to teach us, and again carry off the honors.

THE GENERAL PATHOLOGY OF "SURRA" IN ANIMALS.

BY R. W. BURKE, F.R.C.V.S., CORRESPONDING MEMBER OF THE ITALIAN VETERINARY ACADEMY, ARMY VETERINARY DEPARTMENT, AMBALLA.

(Reprint from The Empress Press, Amballa.)

The contributions to the literature of *surra* in the pages of

our journals are at once instructive and suggestive. Coming from the pens of experts, from those who have had much personal acquaintance with the disease and those who have studied its natural history and pathology, they form a valuable collection of opinions which serve to illustrate the difficulties of inquiry and the obscurity that still dominates the subject. The need for investigation is clearly shown, but the complexity of the questions to be investigated is manifestly great. Many of the writers furnish lists of propositions regarding the classification of the parasite; some indeed limiting themselves to these, whilst others deal more generally with the subject. It could hardly be expected that anything like unanimity of view should prevail, and without attempting to cover the whole ground, it may be useful if we submit a few suggestions upon moot points regarding the disease. In the first place, there is considerable divergence upon the essential nature of surra. I. V. S. Evans was the first who noted the presence of parasites in this disease, but he did not identify the malady. Mr. Steel stands alone in the belief that it is "a form of relapsing fever in the horse." Most veterinary practitioners who have studied the disease, as well as acknowledged bacteriologists, show that there is nothing in common between the two affections. Indeed, Dr. Vandyke Carter himself cannot see any identity between the parasite of surra and the spirillum common to relapsing fever in man. Surgeon-Major Ranking contends that surra is, in fact, ague in the horse. Indeed he thinks that at present there is no other deduction from the facts, and thinks he has obtained further evidence in support of the opinion he has formed as to the identity of the plasmodium malariae and the bacillus malariae in man. He advances reasons for his belief that the general view of the plasmodium being considered as a protozoon is also incorrect. And he points out facts in support of his arguments that surra and ague are equivalent diseases. It is by no means necessary to the truth of his argument that such is the case, as he relied upon the diagnosis of veterinary surgeons that the disease he investigated was surra, and "the diagnosis was borne out by its fatality." Although we can-

not entirely subscribe to Dr. Ranking's opinion that its fatality allies it to ague, yet he has so well supported our own views with regard to the nature of surra* and has so thoroughly studied the question of the micro-organisms present in that disease and argued it with such ability as to compel attention to his views, and indeed the whole question of its parasitology in any inquiry that may be made. The observation of parasites in intermittent fever of the horse (*Equine Diseases of India*, by R. W. Burke, July, 1887, p. 4), resembling those described by Laveran in the blood of man during the ague paroxysms, receives confirmatory evidence also from the pen of Dr. Carter (*Lancet*, June 16, 1888) who found that in ninety-three instances of malarious disease in man (intermittent fever, simple remittent fever, and splenic cachexia) these organisms were present in nine. I have recently shown (*Veterinary Journal*, March, 1890), that similar organisms are present in intermittent and remittent fever of the horse.

Among the parasites found in the blood of the horse the most remarkable is the monad, which is known in India as the surra parasite, the disease with which the creature is associated being termed *surra*, or pernicious anæmia (*Tropical Diseases of the Horse*, 2nd Ed., by R. W. Burke, 1888). Much valuable proof of the influence of the surra parasite in the production of the disease has been lately advanced. It is quite certain, however, that the same parasite—or, at least, an identical organism so far as form is concerned—is found in the blood of a large proportion of the common sewer rats (Lewis, Crookshank, Carter) and camels (Evans), etc., apparently in perfect health. Very little doubt exists as to the occasional presence in the blood of wandering larval nematode worms. The fluid is not generally considered to be the home of parasites, and the helminthologist rarely thinks of searching for them in the interior of blood vessels.

Other animals, besides the horse, have been known to suffer from the disease. Megnin (*Ref. Thierartz*, 1882,) de-

* See article on Malarial Fever Among Horses in India, by R. W. Burke, in the *Veterinary Journal*, July, 1890.

scribes a symptomatic type of this disease seen in dogs and cats, which was caused by an ankylostome producing anæmia, and which is, without doubt, a similar disease to the symptomatic form of anæmia in man. Johne (*Sachs Jahresbericht*, 1884) saw this disease in the dog as a secondary affection following a suppurative form of disease. Imminger (*Wochenschrift f. Thierheilkunde u. Vichzucht*, 1886) has observed enzootic outbreaks of it in cattle. Frohner† (*Archiv. f. Wiss. u. Prakt. Thierheilkunde*, Bd. xii. 5 u. 6 Heft, 1886) describes having only recently seen this disease in the horse, and Friedberger (*Lehrbuch der spec. Pathol. u. Therapie der Hausthiere*, vol. ii, 1887) also saw an outbreak of it in this animal, in which similar parasites were found. We know how severely animals suffer from the presence in the blood of other minute organisms. The strongylus tetracanthus gives rise to epizootic outbreaks of emaciation in horses in many districts of England (Gresswell, *Manual of Equine Medicine*, 1885); the strongylus contortus has been known to produce a form of pernicious anæmia in the horse (*poikilocytose*) observed in Buenos Ayres (Wernicke, *Duets. Zeits. f. Thiermed. u. vergl. Pathologie*, 13 Bd., 2 u. 3 Heft, 1887); Texas fever of cattle has been shown to be due to a paroxysmal destruction of red corpuscles, caused by an intra-globular parasite which Dr. Theobald Smith thinks may be a phase in the life history of some of the mycetozoa, such as the monadineæ, or it may belong to the group of sporozoa, some of which are pronounced cell parasites. (*Vet. Journ.*, March, 1890.) Whilst not only anæmia but liver disease and a form of dysentery are produced by allied parasites in man (Leukhart, Fayrer, Kynsey and others.)

One can hardly conceive that these organisms should exist in the blood, in any numbers, without affecting it prejudicially, though we know they have been found in the blood of animals which were apparently healthy. Of course, it is difficult to define any absolute standard of perfect health, and there may be a considerable amount of cachexia, even in ani-

† *Ueber perniciose Anämie beim Pferde*, von Eugen Fröhner, Berlin, 1886.

mals appearing quite healthy. Dr. Paquin has noted that the parasites of Texas fever are found in the normal liquids and tissues of infectious cattle that always appear healthy, and even in the young before birth. He says,—“The germ of Texas fever requires a resting period, during which it regains its vigor, and until such time as vigor is regained it lies dormant.” (*Journ. Comp. Med. and Vet. Archives*, July, 1890.) What the peculiar change in locality or action on the part of the monads may be that determines the diseased condition, is one of the points which needs elucidation. We naturally ask if there be any analogy in the behavior of other parasites in this respect? *Dracunculus* may cause little or no trouble in the earlier stages, but developing, changing place, and discharging its embryos, the gravest results follow; *trichina* in its earlier stages is comparatively unfelt, but may become the cause of fatal disease. We may therefore conclude from these facts that, in order to produce surra in animals, various conditions, such as affect the patient's system as well as influence the parasite in question, are essential; and that in the absence of these conditions, the same parasites may frequently be present in the blood without causing any disease. Similarly, in regard to the relation of *anchylostoma* to the anæmia of man, it has been noticed that this parasite was so frequent in the post-mortem examination of cases that did not die of anæmia, that it is doubtful as to whether its presence invariably gives rise to anæmia with all its train of symptoms.—(*Brit. Med. Journ.*, June 30th, 1888.)

Dr. Vandyke Carter,* of Bombay, has demonstrated that malarial fever in man is of the nature of hæmatozoic affections. He has ascertained that in remittent fever of man the blood contains parasites which, in their morphology and general features, are identical with parasites of surra in lower animals. Prof. Klebs, of Zurich, who has made a thorough examination of the blood of many patients suffering from influenza, has found in it enormous masses of flagellate monads.

* On the lately demonstrated Blood Contamination and Infective Disease of the Rat and Equines in India, 1888.

Note on some Aspects and Relations of the Blood Organisms in Ague, 1888.

These were of two forms: a smaller, with very active movements of the flagella, and a larger, with much slower movements. In specimens stained with methyl blue, Professor Klebs observed that the monads were sometimes on the edge of the red blood corpuscles, and sometimes inside them. They are said to resemble the hæmatozoa of pernicious anæmia, and the plasmodia found by Laveran in the blood of patients suffering from malaria. (*Wiener Med. Zeitung*, Feb. 4th, 1890.)

I have in the first edition of my work on *Equine Diseases of India*, 1887, and elsewhere, shown that similar monads may be found in intermittent and remittent fever of the horse in India. And Dr. Ranking has recently claimed an identity between the organisms of surra and those found in intermittent fever (ague) of the human subject (*Veterinary Journal*, June, 1891). Klebs acknowledges that in those cases in which he observed flagellate protozoa in the blood in very large numbers there was a repeated occurrence of febrile states, generally in the form of intermissions (*Centralb. f. Bact. u. Parasit.*, No. 5, vii, 1890). The existence of protozoa in the blood in malarial or intermittent fever is undoubted, and Dr. Klebs assumes that in those cases in which he noted the presence of monads (*Rhizomastignia* of Butschli) there was a repeated occurrence of febrile states, generally in the form of intermission. (*Brit. Med. Journ.*, Feb. 15th, 1890).

The differences of opinion of various investigators as to the morphology of the parasite witnessed in surra are clearly accounted for in McCurdy's description of the organism peculiar to Texas fever, which I believe to be an analogous disease. Mr. McCurdy says, — "The germ of this disease may be said to be of the bacillar species and the facultative type, assuming various forms during life. The ovoid forms are the ones particularly noticed, but it appears that this is only a transition stage which finally terminates in the more mature form. If cultures are prepared from material containing the ovoid forms, they elongate, become surrounded by a gelatinous areola, and break off into two short rods or double and single bodies. The spherical ovoid forms and short rods are found both in the liver and fluids in zooglea. At the

ends of some germs flagella are noticed, which probably give them the slow, bending, twisting motion that is often seen in many cultures. The more mature forms vary in size from 4 m. to 5 m. in length, and 17 m. in width; in the ovoid stage, the length is from 25 m. to 30 m., and width about 15 m. They are difficult to stain, but answer most readily to 'Johne's fuchsin.' The cultivation has been tried in many different media, such as blood serum, beef broth, agar-agar, egg albumin, potatoes, and oyster bouillon, but artificial lymph with liver broth seems to be productive of the best results."—(*Vet. Journ.*, June, 1891).

Speaking of the intra-globular bodies met with in Texas fever of cattle, Dr. Theobald Smith* says,—“The smallest forms appear like deeply stained cocci, about $\frac{1}{2}$ to 1 μ in diameter, situated within the unstained circle of the corpuscle. Occasionally the bodies are nearer 2 μ in diameter, and then the staining may be less dense. Besides the spherical forms, ovoid forms are not uncommon. These usually occur in pairs within the same red corpuscle. A still rarer pear-shaped form is encountered in stained preparations of the blood. It is rounded at one pole, while the other is pointed and sometimes drawn out as a short filament. These forms quite invariably occurred in pairs, a corpuscle being occupied by a single pair. I believe the pair to be a result of division of the single body within the globule. In one instance I saw the tapering ends of a pair apparently continuous. Each body was about 3 μ long, its greatest width, 1-5 μ . These are the largest I have encountered.” This same form of organism has been noted by Frohner † in pernicious anæmia among horses in Germany, where two, and even three or four were witnessed in the same corpuscle.

Of chief interest at present stands the subject of the pathology of surra. The discovery of the parasite might be thought to have advanced the question of its etiology sufficiently in itself without any further questions regarding

* *Veterinary Journal*, March, 1890.

† *Archiv, f. Wiss. u. Prakt. Thierheilk.*, Bd. xii, 5 u. 6 Heft, 1886.

the disease, but as we have endeavored to show, there is much to learn about this parasite and its behavior in the body of the animal. Our means of investigation are generally so limited and imperfect that in any inquiry we must note everything that might lead us to form anything like an accurate notion of the facts presented. Much valuable data has been advanced by the different writers in support of their beliefs; still, all is hypothetical, and the need for extended inquiry into the pathology of surra was never better shown. In fact, we are not far from the truth in asserting that a wider knowledge of the laws of pathology may be requisite before the problem can be properly approached.

After all, the main problem is, what disease in mankind is surra allied to in its main points? Has it any identity to any disease of human beings? To what disease does it bear the greatest resemblance? And in what points? So far the answers to these questions have not been faced properly; for although the answer to them would greatly assist our inquiry into the pathology of the disease, yet hitherto it has been found impracticable.

The general name of ague, intermittent fever, or malaria is given to a disease produced by a common cause;* and the same cause is credited with producing other more severe forms of disease called remittent fever, pernicious anæmia, malarial cachexia, etc. It may be a question whether all these forms of fever are due to the same cause; but the general opinion is that they all constitute the same disease in various degrees of severity. The one feature common to all is fever which remits and returns periodically. The other symptoms need not be considered here. It will suffice, perhaps, if we take up the characters of surra first. We shall then be able to arrive at an opinion as to which condition it is allied to in

* With regard to the nature of the germ, certain researches seem to identify it with a certain bacillus found in the soil of malarious districts; but more recently an animal organism, a flagellate infusorian, has been found in the blood of ague patients, which seems more probably the cause of the disease. It has been shown by Marchiafava and Celli that the inoculation of the blood of an ague patient into healthy persons will reproduce the disease in them.

particular. We have alluded to these points in previous articles we have contributed to the *Veterinary Journal* and elsewhere. In drawing attention afresh to this disease I shall refer briefly to the most important features which are regarded as peculiar to it.

We may state that the clinical history of surra in general is that of peniculous anæmia. The marked anæmic conditions, observed both *ante* and *post-mortem*, leucocytosis, fatty degeneration of the muscles, liver, spleen, and other organs, the general hemorrhages, and the chronic state of fever, which end in death in so many cases, leave no doubt as to the nature of the disease.

(a) TEMPERATURE.—A point of interest we have noted in the case of surra in India, and which other veterinary surgeons had done in that of peniculous anæmia seen in Europe, is the well-worn subject, the paroxysms of increase of temperature, the so-called “anæmia fever” of writers on pernicious anæmia in the human subject. Zschokke* also has assigned a prominent place to this fever, which he found to be of an intermittent type in the horse; and Frohner† has likewise noted a marked rise in temperature on the fourth day, which, with slight remissions, remained high till death.

(b) DURATION AND COURSE.—The most important feature of the disease is that there is no history of a definite onset, and that the condition is progressive. There are usually a number of relapses, the average duration of the disease being probably not less than two months. The course is sometimes prolonged to several, usually six to eight weeks; the average duration of the human (pernicious anæmia) being also estimated at “two months.” The average of several cases noted by Dr. Evans was two months. It is seen that weak animals succumb sooner, and in some outbreaks the ordinary duration of the disease does not exceed from one week to a fortnight, and, frequently may be less in outbreaks in which reckoning was made after the date of admission on the sick report.

**Schweizer-Archiv. f. Thierheilkunde*, Bd. 25, 1883.

†*Archiv. f. Wiss u. Prakt, Thierheilkunde*, Bd. 12, 5 u, 6 Heft, 1886.

(c) VARIETIES.—“ There is another variety of surra, which is never acute from the beginning, or scarcely even sub-acute. It is truly chronic, may last for months, and occasionally intermits during its course. Though such animals may be seen to be frequently on the sick list for debility due to general loss of blood, indicated by anæmia of mucous membranes, a weak and readily excitable pulse, and swelling of the limbs, etc., they cannot be said at any time to suffer from more than chronic asthenia, and to say the least of it, their appetite remains as good throughout the course of this disease as when they were in perfect health. Such cases occur sporadically, are not very uncommon, and I believe, a number of rejections by means of special casting committees to which every battery of artillery and regiment of cavalry is liable in India are due to this disease. In most, if not all of these cases it is exceedingly difficult to make any impression by the use of internal remedies. They are liable to frequent intermittent attacks of debility, in many cases the animals falling away to a mere skeleton. In the treatment of such cases a most essential element is removal from the place where the disease was contracted. In the acute form, as mentioned before, the disease is very fatal, but in the milder and more chronic form recovery is sometimes noted, although the malady being liable to recurrence it is difficult to say whether this really takes place.”—(*Tropical Diseases of the Horse*, 2d Ed., 1888, pp. 44-5.) A few cases have been seen by Dr. Evans to make slow progress in the disease for over a year.

(d) FATALITY.—The disease has been characterized as an “invariably fatal” one. There is probably no disease in which the fatality is so high as in pernicious anæmia.

(e) URINE.—The urine in most cases is albuminous, and contains much hæmoglobin which is set free by the destruction of the red corpuscles.

(f) APPETITE.—In spite of a greedy appetite, debility appears progressive in character. It is scarcely necessary to remark on the importance of this symptom in diagnosis, as all who have written on surra lay special stress on it. Vet-

erinary surgeon Cooper, in his report on an outbreak of surra among ponies in the Berars, states that "the appetite is seldom quite lost, and sometimes an animal continues to feed up to the very last." And Professor Frohner has also noticed it in the German type of the equine disease.

(g) PARALYSIS.—Most veterinary surgeons who have witnessed surra in animals in India as well as in Burma mention both an acute and a chronic form of paralysis as commonly characterizing it. And Frohner has noted the same feature in Germany, where this symptom of paralysis was not infrequently present in pernicious anæmia of horses.

We have also noticed pronounced stringhalt, muscular tremors, crossing of the legs, etc., develop during the course of surra, due to effusion on the spinal cord and on individual nerves. And Mr. Thomas Bowhill, F.R.C.V.S., records having witnessed somewhat similar symptoms in Southern or Texas cattle fever (*Veterinary Journal*, July, 1890).

(h) TREATMENT.—I attached considerable importance to arsenic in the treatment of cases of surra, with the view of contrasting or comparing the results with those obtained through the use of this agent in pernicious anæmia; and veterinary surgeon Butler* recently reported most interesting results from treatment of cases of this disease in Burma ponies "with arsenic pushed as far as possible." This observation is worth noting, when we remember that arsenic is the only remedy of any value in cases of pernicious anæmia in the human subject. In a recent paper by Professor Osler, in the *Therapeutic Gazette* of the same year, he states that in all cases of pernicious or essential anæmia there was no case of recovery in which arsenic did not form the basis of treatment. I have found that hypodermic injections of quinine have a powerful effect in reducing temperature during the paroxysms. "I know of nothing that has such an antipyretic power as the sulphate of quinine, for it decreases the temperature, retards tissue change, and prevents or modifies periodicity."—(*Tropical Diseases of the Horse*, 2d Ed., 1888, p. 49—

* *Quarterly Journ. Veterinary Science in India*, 1888.

50.) And we are supported in this opinion by Dr. Ranking, who says: "Quinine on full doses appears to control the disease, supplemented by general measures to combat the anæmia and weakness consequent on prolonged illness, chiefly by milk, iron and arsenic." (*Veterinary Journal*, June, 1891.) There is little doubt that if the disease is treated early by quinine, arsenic, iron and perhaps other tonics, by changing the water and making some variation in the location of the animals, great benefit, if not absolute removal of the disease, may be secured. To obtain the most satisfactory results, it should be treated early, before marked tissue changes have taken place. If the treatment be adopted at a later period, it may still be beneficial, though less so than in the early stage.

(i) PREVENTION.—Prevention is better than cure. Hence climate and soils favorable to the growth of malarial organisms should always be avoided. According to Parkes the following soils are most so, *viz.*—alluvial soils, old estuaries, deltas, sands, clay, chalk, granite or trap rocks, and particularly vegetable soils at the foot of hills—as, the jungle, or terai, in India.

We have noted that change of locality and climate is most favorable to recovery in these cases. The influence of high annual temperature in producing more pernicious forms of malaria is illustrated in the case of surra, and suggests the removal of all animals suspected of infection to those stations which are known to possess a milder climate in India (and, perhaps, better still, to the hills), which are less suitable to the growth of surra organisms. And, lastly, preventive inoculation with surra parasites artificially weakened, is a most important means of acquiring permanent immunity from the disease, and should be specially practised.

(j) INFLUENCE OF SEASON.—It has been seen that surra occurs most commonly after the rainy season in India. There may be many local conditions—susceptibility to climate, season, etc., that may affect the greater prevalence of the disease in animals, in different outbreaks. Dr. Moore, at a recent meeting of the Royal Academy of Medicine, Ireland,

pointed out that season exercised a great influence on the occurrence of pernicious anæmia also in the human subject.

(*k*) POST-MORTEM APPEARANCES.—Dr. Evans, our first authority on surra, writes: "I am prepared to state positively that this disease is not characterized by any structural organic change; it is purely a disease of the blood." Principal Veterinary Surgeon Oliphant says: "In one outbreak of surra in the 18th Bengal Cavalry, in which one hundred and eighty horses died, I made dozens of post-mortem examinations, and the appearances in all were identical; extreme pallidity of the tissues, with perhaps a trifling serous effusion into the abdomen, etc. In fact, the animals looked as if they had been starved to death." Veterinary surgeon Cooper says, "that the most striking feature is the anæmic condition of the tissues generally and the absence of recognizable lesion." And Zschokke* also states "that none of the principal organs show any marked structural change" in the equine type of pernicious anæmia noticed in Germany.

Mr. Steel lays stress on the presence of gastric ulcers, which he believes to be "characteristic of surra;" and the relation of gastric ulceration to pernicious anæmia formed the subject of discussion lately at the Royal Academy of Medicine of Ireland. (*Lancet*, March 10, 1888, page 474.)

The pathological changes that take place in the various organs and tissues of the body as a result of surra may be characterised, in a word, as degeneration due to imperfect nourishment. The blood itself is rendered unfitted for the purposes of proper nutrition, and degenerative changes of an adipose character, sometimes leading to disintegration of portions of the imperfectly nourished tissue, take place. When organs and parts so weakened by starvation are distended with anæmic blood which they cannot utilise, sloughs result from gangrene of the imperfectly nourished tissues, as evidenced in the ulcerations of the stomach, etc., noted in this disease. The ulcer itself once formed, suffers from nutritional defect, owing to the impoverished state of the blood,

* *Schweizer Archiv. für Thierheilkunde*, Bd. 25, 1883.

which prevents the formation of resisting tissue around it, and often leads to perforations. The alimentary mucous membrane in general will be found to be in an anæmic condition, with petechiæ and ulcerated spots the result of disintegration and atrophy. Although the tissues present a blanched appearance, there is a large deposit of fat all over the body, but especially noticeable under the skin. This gives to the tissues a peculiar jaundiced appearance, which is shown to be due to deposition of fat globules seen under the microscope. It is easy to understand how a process of abstraction of blood, a fluid rich in oxygen, by the parasites, would lead to the conversion of albuminoid tissue into fat. The lymphatic glands throughout the body are more or less swollen and œdematous. There is often acute dropsy, with no other post-mortem lesion save extreme anæmia and yellow-staining of the tissues due to fatty degeneration. The heart was found to be the seat of marked fatty changes in cases seen by Mr. Steel, and this is corroborated by the observations of Frohner and other Continental writers. As the lymphatic glands supply lymph corpuscles to the blood, this may account for the excessive production of leucocytes, although how and in what way this extraordinary accumulation of leucocytes in the blood is produced in surra has not yet been clearly explained.

The early symptoms of hepatitis present in surra, which is shown by jaundice of the visible mucous membranes, may be due to congestion of the liver caused by irritation of the worms in the biliary capillaries, leading to their rupture and consequent deposits in gland-substance. There is every reason to believe that when the liver has become so invaded, it is incapable not only of duly performing its own function of secreting bile, which is essential to proper digestion and health, but that it is an abiding pathological source of general jaundice, which, if not removed, may result in the gravest evils—blood disorganization, general anæmia, anasarca, etc.

In those cases in which paralysis of the hinder quarters or other nervous symptoms are well marked, the grey-matter of the cord generally shows blood extravasations and stain-

ing of the nerve cells; but beyond a tendency to congestion and occasional blood extravasation, no lesions are usually discovered in the nervous system.

I think that we may safely formulate a definition of this disease with the aid of the foregoing observations. It is essentially a blood disease allied to, if not identical with, that disease of mankind known as pernicious anæmia. It assumes an acute and a chronic form, but more frequently the latter in the equine species in India, and is known under a variety of names—intermittent and remittent fever, malaria, malarial cachexia, pernicious anæmia, etc.—depending on the stage of development and other features. That an acute form of surra occurs in horses was noted by many observers, and we have already pointed out, in *Tropical Diseases of the Horse*, 1888, p. 41, and elsewhere, that this was in fact intermittent and remittent fever of the horse, which is better known perhaps under the common name of ague, malaria, etc. And Dr. Ranking has recently corroborated our views, and states that in those cases of surra among horses in which he noted the presence of parasites, there was a decided likeness to malarial fever of mankind.

Regarding the true nature of the parasite it will suffice here to state that some authorities regard it as belonging to the class Infusoria, a higher group of Protozoa; while others think it more probably belongs to the class of Mycetozoa (or fungus animalcules) which lie on the confines of animal and vegetable life.

The parasites of surra present a remarkable complexity of organization, that constitutes the great difficulty of classifying and distinguishing species which undergo marked changes of form before arriving at maturity. Hence we may speak of them as occurring in the imperfect or juvenile form, and in the mature form; and it is in accordance with analogy to suggest that the 'flagellated,' the 'crescent,' the 'intracellular,' the 'free' and other forms are stages in the development of the same species.

The problem of the connection between *plasmodium malarie* and the *bacillus malarie* still awaits solution. How fruitful such a line of investigation may be has been conclusively

proved by the discoveries of Klebs, Tommasi-Crudeli and other writers.

But these inquiries must stand over at present, and we urgently want a practitioner of experience to stir up the fainting energies of our young veterinarians in India. That such a stimulus is greatly needed is clear from the literature of the disease and its present condition. We want readable dissertations on its clinical characteristics, general pathology or treatment and prevention, of value to the general practitioner. It is, I think, full time that we made some decided effort to save from extinction what was known of the disease in the past and which, under careful record, might take an important part in the scientific studies of the subject of surra in India.

CONCLUSION:—

1. That surra is malarial fever among horses, and has a mild and a severe form.

2. It appears most frequently in the pernicious form in India. The influence of high annual temperature in producing more pernicious forms of malaria is well known.

3. In the mild, as well as in the severe form, treatment, unless early carried out, proves of little avail.

4. Preventive measures, and particularly protective inoculation, should be adopted in preference for animals.

5. We know that the disease is taken into the body by the mouth or by inoculation, and that it is not infectious. (Evans.)

6. That it is given out of the body by the excretions, but particularly by the fæces and urine. Hence grounds exposed to affected animals should not be used for grass-cutting in India.

7. Feeding on grass secured from lowlands and lands uncultivated and undrained for any lengthened period, and the drinking of fouled, stagnant, marshy water, being some of the more direct agencies that in the popular opinion produce this disease, attention should be directed to prophylactic and preventive measures.

8. Climate and soils favorable to the growth of malarial organisms should always be avoided.

REPORTS OF CASES.

FRACTURE OF LARGE METACARPAL BONE.

By S. R. HOWARD, V.S., Hillsboro, Ohio.

Subject, a five-year-old, eight hundred pound running mare, property of S. Bayliss, liveryman. On June 6th, 1891, they were speeding her a quarter on time. Had been in training two months. While doing her best she faltered and fell. I was called immediately. Found large metacarpal of left leg had sustained in its lower third a simple, complete oblique fracture, without displacement.

Prepared a piece of sole-leather as a splint, extending from just below knee to within an inch of toe, and about two-thirds around leg. Slashed it so it would mould well to leg. Had her led to box stall. Placed a man at her head with twitch on her, and gave her a hypodermic of morphine. Had another man steady the ankle while I bandaged.

I first placed a dry roller and padded well behind fetlock with tow. I then dipped leather splint in hot water, moulded it to the part, and secured all with plaster paris bandages, from below knee and including entire foot. Left her in box stall and bedded with sawdust and cut straw.

In ten days crepitation ceased, and there was at no time the swelling usually seen in such cases. The owner decided, in a few days after accident, that bandages were not tight enough. Upon consultation I refused to replace them. In two weeks she began placing some weight upon limb. In five weeks the owner removed bandages and walked her home. Kept her up several weeks and then turned her to grass. Took her up middle of October, lameness scarcely perceptible. Saw him trotting her to a light buggy to-day, (six months from time of accident), and I could see no lameness.

This I consider an exceptionally successful case. I do not use sling where fracture is below knee, unless owner wishes it. In a very short time they get up and down all right.

I measured and compared this mare's fore legs to-day. The one fractured is perfectly straight, but at lower part of frac-

ture leg is enlarged one and one-half inch, tapering upward. She stands square upon it and does not limp. We think she can be driven lightly in the spring, in livery.

FRACTURE OF OS TRAPEZIUM OR PISIFORM BONE.

BY THE SAME.

“As the trapezium is the lever bone of the carpal joint, its development and position are points of very great importance.”—*Strangeway*.

Subject, a six-year-old, thirteen hundred pound gelding, property of S. Och & Co. On 9th of January, 1891, he ran off. He galloped down a steep road, leaped over a strong fence at bottom of road, falling, and leaving wagon on opposite side of the fence. Being assisted to his feet, he was found to be exceedingly lame in one fore limb. Was walked two miles to my hospital. He kept the knee joint constantly flexed and foot off the ground. He trembled for several days, and seemed to suffer considerably from the shock. Occasionally I gave him hypodermics of morphine.

Upon examination I found trapezium fractured in several places, and, what is strange to me, no swelling occurred for at least three days. The articulation, I am sure, was not injured. Placed him in a box stall, and, upon demand of owner, put him in a sling. Anodyne liniment to knee. Let him out of sling in six days. He could lie down and get up handily. In about ten days he could stand full share of weight upon this leg, but showed considerable pain upon bringing foot to ground in walking, or upon some one flexing metacarpus.

There was by this time some enlargement of a bony character, which has remained. He gradually became better of his lameness, so that in about seven weeks they began using him, although he was considerably lame in trotting, but not at all in walking.

Since six months after accident and to present time, he has not tumbled or limped in the least in trotting or walking. The results of fracture of the trapezium in this case are, you cannot bring the foot within six inches of radius, and affected knee is two inches larger in circumference than the opposite.

This bony enlargement is not at all unsightly, and to see him trotting along with a load you would not suspect the above changes. To all purpose he is as sound as ever. His owners (butchers) sometimes drive him quite a number of miles after lambs and calves, which he draws into town without flinching in the least or stumbling.

POISONING BY ACONITE.

BY RICHARD R. MORRISON, D.V.S., White Plains, N. Y.

The patient was a bay gelding, ten years old, about sixteen hands high and in good condition. His owner, (a pedler), told me that the animal had had an attack of colic, and that he had given him half-a-pint of gin and an ounce of nitre, and as the horse still seemed in pain, an hour afterwards he called a friend to see him. The friend told him that it was only a slight case of colic and that he would stop it in a few minutes; he proceeded to do so by sending to the drug store for a two ounce vial of tinct. aconite, ten drachms of which he gave to the animal. Some of the bystanders at this stage asked if that was not a large dose, but the amateur doctor replied that two ounces were not too much for a horse and that he always treated colic that way. (I afterwards secured the bottle, measured the contents and found that six drachms remained). However, the owner became alarmed after that and sent for me.

When I arrived I found the animal lying down, and with some difficulty we got him on his feet; but he could not stand without assistance; temperature 101° , pulse almost imperceptible and respiration irregular. The animal seemed to have much difficulty in the act of respiration; (he would breathe normally for three or four respirations and then would stop as if there was a paralysis of the respiratory muscles and then in a few moments would respire normally as before). There was also very marked diaphoresis and insalivation, the labial and nasal muscles were contracted, disclosing the teeth; the animal's neck was arched, and he appeared to be making continual efforts to swallow and was trembling violently.

I at once gave him a hypodermic injection of tinct. digitalis \mathfrak{z} i and tinct. strophantus \mathfrak{z} ss, which I followed by spts. ammo. aromat \mathfrak{z} ss, acid tannici \mathfrak{z} i, in about four ounces of whiskey. As soon as we let the animal alone he lay down, and in about fifteen minutes I gave him another hypodermic injection of digitalis and strophanthus as before, and as he was evidently in pain I gave him four grains of morph. sulphat. hypodermically. I then left instruction to give the animal spts. ammo. aromat. \mathfrak{z} i acid and tannici \mathfrak{z} ss in two ounces of whiskey every half hour until I returned.

When I returned in about an hour and a half, I found the animal standing up and evidently much relieved, his pulse was 50, but irregular; salivation was decreasing; respiration 12, but was still perspiring freely; the bowels and kidneys were working freely. I gave him another hypodermic injection of digitalis and strophanthus as before, and left the following prescription:

R	Tinct. Strophantus,	\mathfrak{z} ss.
	Tinct. Digitalis,	\mathfrak{z} i.
	Acidi Tannici,	\mathfrak{z} ii
	Liq. Ammo. Acet.,	\mathfrak{z} iii
	Spts. Vini. Rect. Dil., q. s., ft.	\mathfrak{z} xvi.

M.—

Sig.—Two ounces to be given every hour.

I called again later that night and found the horse out of danger, functions all being normal, except that he was dull and listless and not inclined to eat; but I did not alter the treatment except that I gave the medicine in longer intervals, and on the third day the animal went to work and seemed none the worse for his experience.

I thought that perhaps the animal might have spilt most of the aconite when it was given, but on careful enquiry from the bystanders they said that he hardly spilt any of it, so I presume he must have swallowed at least \mathfrak{z} i of it; so I suppose that the tannic acid formed with it the insoluble tannate of aconite and in that manner, with the aid of the stimulant, saved the animal's life.

AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT.

PROLAPSUS UTERI—REDUCTION—AMPUTATION—OVARIAN AB-
CESSES—DEATH.

BY E. B. ACKERMAN, D.V.S., House Surgeon.

The patient was a very large St. Bernard bitch, about one year old, which had been imported for breeding purposes. She was brought to the hospital on the 29th of August, without any history of her condition, except that she had never been lined.

She had prolapsus uteri, exhibited by a large red tumor about the size of a muskmelon, protruding through the vulva, and presenting in its center a *cul de sac*. It was somewhat cold to the touch, and not painful. The mass was quite indurated, and on that account the possibility of reduction was doubtful; indeed, it was only after two days that this could be done, the projecting uterus being previously fomented and protected, and having somewhat diminished in size. The reduction, however, was difficult, and could not be accomplished until an hour of pressure had been applied with the hands, the bitch being kept with her hinder extremities elevated. A *repoussoir*, made with a piece of smooth stick, was pushed against the uterus, at the neck, to assist the work of returning the organ into the pelvic cavity. The reduction having been made, a kind of opiate pessary made with a sponge was pushed into the vagina, the vulva closed with two sutures, and an ice bag put over the parts and kept in place with a bandage.

This proved but partially successful, the prolapsus returning after a few hours. Reduced a second time, it seemed that the trouble was ended; and though there was considerable inflammation and discharge of pus, etc., the dog was sent home in a few days convalescent.

Four days later she was returned to the hospital. Submitted to the same manipulations, the uterus was again reduced, and suppositories of opium and bandages were used, but failed. A large rubber pessary was then introduced, and

left in place for three days. When taken off the animal seemed to be radically relieved, as for two weeks no further trouble appeared. After this length of time, a slight tendency to the return of the trouble showed itself. The opiate suppository and india rubber pessary proved, this time, of no avail. Cold water irrigations seemed once again to bring on a good result, and for about three weeks the bitch seemed to enjoy perfect health.

During that time the owner had been notified of her condition, and though he had forbidden amputation in any case, it was feared that the operation would become necessary, should the prolapsus return. And it did return towards October 25th, being, as on the previous occasions, indicated by the continued straining of the bitch, as if trying to defecate.

This time all efforts to reduce the organ remained fruitless, and the owner was notified of the state of affairs. He paid no attention to our notices, and after waiting nearly a week, the condition of the bitch becoming worse, she was ætherized and made ready for the operation.

The inversion of the organ was not complete, nor could it be made so. The walls were so thickened and hard that the *ecraseur* broke during the amputation. A strong ligature was then applied in its place, and excision made with the knife.

The operation was almost bloodless. The animal remained comfortable, and was doing well for the first three days, but at the end of the third day she refused her food; her temperature rose to $103\frac{1}{2}^{\circ}$, her pulse to 120, and she died during the following night.

On opening the abdominal cavity two or three quarts of dirty, offensive fluid escaped. There was localized peritonitis in the vicinity of the genital organs. Both ovaries and sub-lumbar glands were enlarged and filled with abscesses. The examination of the removed uterus having revealed that the internal surface showed only the opening of one cornua, careful dissection of the pelvic cavity showed that there was only one of those appendages of the uterus, there remaining in the pelvis but the remainder or strings of one cornua, corresponding to the opening that existed in the uterus. There

was also only one broad ligament. With the exception of the right kidney enlarged and the lungs somewhat congested, all the other organs were normal.

The interest of this case rests in the abnormal development of the uterus and the suppurative ovaritis, as these may be considered as direct and indirect causes in the repeated exhibitions of the prolapsus. If the disease of the ovaries may be considered as the direct cause, by giving rise to straining through reflex action, is it improper to suppose that the prolapsus might not have taken place even with the diseased ovaries, had the uterus been properly held in position by its two cornuæ and their broad ligaments had they been present?

A LARGE FIBROMA OF THE HOCK.

BY THE SAME.

A steel-gray gelding, seven years old, was brought to the hospital with the following history, November 16th, 1891.

Some fourteen months previous, one day while the owner was cleaning him, he noticed a small pimple on the outside of the near hock. He did not think it amounted to anything serious, in fact it disappeared for two or three weeks, to return larger. The owner blistered it, but this seems to have put life into the growth, and it began to enlarge rapidly. It was then blistered and blistered again, until seven applications of the ointment were made without result. The tumor continued growing. A seton was passed through it, but no good was gained by it. Iodine was freely used, but failed to effect any improvement. Lately, nothing has been done for it, but though only an eye-sore, as the horse is not lame and seemed not to be incommodated by it, the owner desired it removed if possible.

The tumor was comparatively well defined, hard, painless, somewhat moveable and had all the appearance of being of a fibrous character. Explored with a fine trocar, it seemed to be hollow in its center, but yet no fluid escaped through the exploring opening, and its removal by dissection was decided on.

The animal being thrown, a longitudinal incision was made in the long axis of the growth, and the skin over it dissected by a T incision, it being necessary to enlarge the opening. Raising it by means of a piece of tape run through it to assist in holding it up while the cellular tissue (somewhat thickened by the repeated blisters) was divided, its complete resection from its solid attachment was made with the ecraseur. Small blood-vessels were ligated during the operation.

The wound was packed with oakum, and closed with interrupted sutures, having a place for drainage at the bottom. The stitches held well for a few days, and the wound was kept from gaping by means of adhesive plaster.

The tumor weighed eleven ounces and a half, and consisted of a large fibrous mass, encapsulated by a dense envelope, and containing in its center a gelatinous substance resembling coagulated synovial fluid—a condition which explains the sensation obtained when the tumor was first explored, viz., that it was hollow in its center.

VETERINARY SANITARY SCIENCE.

ACTINOMYCOSIS BOVIS.

By W. L. W.

Probably the most interesting case in the legal history of veterinary sanitary science or meat inspection in the United States was the suit of Greenhut et. al. vs Pearson et. al in the circuit court of Peoria Co., tried at Peoria, Ill., Nov. 12 to 24 inclusive, before Judge Shaw.

J. B. Greenhut, the chief plaintiff, is President of the whiskey trust and with his colleagues is heavily interested in cattle feeding, utilizing for this purpose the distillery refuse. J. M. Pearson was, at the time when the ground for the present action was laid, the Chairman of the State Board of Live Stock Commissioners of Illinois, a board created by the laws of Illinois for the purpose of controlling or extirpating contagious or infectious diseases among domestic animals.

Upon the advice of the State Veterinarian, in conjunction

with that of several of his assistants, as well as that of several prominent veterinary and human sanitarians, this state board had placed in quarantine about one hundred and thirty cattle affected in varying degrees with actinomycosis, and refused to allow the affected animals or their carcasses to be placed upon the market, and finally, except those who died in quarantine or were destroyed of the purpose for making autopsies, were shipped to Chicago and "tanked" and their products used for commercial purposes.

Mr. Greenhut and his associates in ownership brought suit to recover the value of the cattle for beef purposes at a sound meat valuation.

Their first witness was Dr. Hickman, chief inspector for the Bureau of Animal Industry at Chicago, Ill.

In his direct evidence he maintained that actinomycosis was transmissible by inoculation from animal to animal and from animal to man. He had had an extensive experience with the disease and had studied it extensively in connection with his duties as a meat inspector.

On cross-examination he became badly confused, admitted that he had made no critical study of the disease, had seen *no* post-mortem examinations worthy of relation, knew nothing of the disease in man, did not know how many cases of actinomycosis had been discovered and reported in man in his own city during the past year, was certain that man could not get the disease from affected cattle but that they most likely contracted the disease by eating barley or grass.

After admitting that the actinomyces found on vegetation, in affected animals, and in man were all identical, and that man or animals might contract the disease by micro-organism from vegetation becoming transplanted to an abraded surface or other suitable ground for growth, he was unable to explain why the actinomyces growing in animal tissues were not equally competent to cause actinomycosis in other animals or man in like conditions. In his capacity as inspector of export cattle he admitted that he refused to tag for exportation cattle affected with actinomycosis, and when pressed for his reasons for condemning these for live export after he had sworn their

meat was perfectly fit for human food, he could give no clear explanation of his actions but could only say that he held them for post-mortem examination, although he did not himself make such post-mortems, nor did he personally know that such examinations were made.

G. G. Heeps, a "country cow doctor," from Annaman, Ill., was called to support Dr. Hickman's theories as to the disease, his evidence developing nothing material over that of Dr. H. Dr. Vogel of Chicago, who represented himself as a graduate of Vienna and Munich veterinary schools and with a practical experience of over fifty years, fully substantiated Dr. Hickman's position, and said (through an interpreter) that no matter how large the actinomycotic tumors, nor how great the suppuration or decomposition, the meat of the animal, except the tumor itself, was perfectly fit for human food. This, he said, was the opinion of the best German authorities, and when pressed on cross-examination for the names of his authorities he cited Friedberger and Frohner's Spec. Path. and Therap., and these authors he was forced to admit described actinomycosis as an infectious disease. There seemed to be a total want of abhorrence in his nature for any diseased or decomposing meat, to such an extent that his evidence was repulsive to every one.

Dr. O. Schwartzkopff, a graduate of Berlin veterinary high school and now dean of the veterinary department of the University of Minnesota, said that actinomycosis was not contagious but could be transmitted from animal to animal experimentally, but that while experimental inoculation would produce the disease, accidental inoculation (even in same parts) would not transmit it. The actinomyces were too large to pass through the capillaries, hence could not be disseminated by means of the circulation. The disease does not, according to his researches, affect the meat of the animal, but only the head and neighboring lymphatic glands. He had not seen it in the muscles or spleen. Upon being shown Ponfick's "*Aktinomykose des Menschen*" with colored plates showing the disease in muscles of heart and in the spleen, he admitted that it did occur in those parts and that there was

no way known to him to account for the disease in these organs except the micro-organisms be carried by the circulation.

On cross-examination he admitted that he had recently said over his signature, and that such assertion was true, that in his mind parts of animals affected with actinomycosis were unfit for human food, but still maintained that the disease could not be transmitted from animal to animal nor from animal to man by accident, but that it could be contracted by either from accidental inoculation with the same germ growing upon plants. When asked to explain why the actinomyces of plants would, in his opinion, produce the disease in animals and the identical micro-organism from animal tissues would not, he could not answer.

Dr. F. S. Billings, professor of pathology and histology at the Chicago Veterinary College and for several years a student in Germany, was called on behalf of the plaintiffs.

Complaining of illness, the cross-examination was made very brief, and mainly directed toward showing his egotism. He asserted that he had made the infectious diseases of animals his sole study for a number of years, day and night. He was quite positive that he knew a *great deal* about infectious diseases of animals, more than all other scientists on the American continent, and admitted that before coming upon the stand that he had asserted he was "the Jesus Christ of infectious diseases in America."

The defendants called as witnesses, Prof. A. H. Baker, of Chicago Veterinary College; Dr. Chas. N. Hewitt, Secretary Minnesota Board of Health; State Veterinarian Casewell, of Chicago, Ill.; Assistant Veterinarians Scott of Peoria and Page of Rockford; Dr. Nattress, of Delevan, Ill.; W. L. Williams, formerly Assistant State Veterinarian, of Bloomington, Ill., now Professor of Veterinary Science in Perdue University, LaFayette, Ind., and affidavits were submitted from Prof. James Law, of Cornell University; Dr. A. Liautard, Principal American Veterinary College, N. Y.; Dr. Paul Paquin, of Mich.; Prof. Jos. Hughes, of Chicago Veterinary College; Doctors of Medicine Ochsner, Murphy and Schirmer of Chi-

cago, etc. These witnesses all gave essentially the same testimony as to the nature of actinomycosis; that it was due to the invasion of the tissues by the ray fungus or actinomyces, which was probably obtained originally from vegetable food products, and gained entrance into the system through wounds, abrasions, glandular openings or very delicate membranes; that it had been transmitted experimentally from animal to animal and from man to animal; it is contagious, although not highly so, and can, so far as science teaches us at present, be as readily transmitted by transplantation of ray fungus from animal to animal or animal to man, as by means of the same fungus conveyed from a plant to animal or man; that the actinomyces found on vegetation, in the tumors of cattle and in actinomycosis of man are all, so far as is known, identical.

Many of the witnesses had made post-mortem examinations of affected cattle, and had found the disease in bones of jaws, face and head, in lymphatics of head, throat, thorax, deep inguinal region, and those lodged in the intermuscular connective tissue of the legs; in the tongue, pharynx, lungs, liver, spleen, stomach, bowels, mesentery, prepuce, etc.

The disease, in their minds, is dangerously contagious, in the sense that the life of the affected patient is greatly jeopardized. They believed the disease capable of entering into and passing through the lymphatic and hæmal circulations, and based their conclusion on, first: the size of the club-shaped mycelia of the ray fungi (without reckoning the necessarily smaller spores which the mycelia bear,) which are not generally so large as the blood corpuscles, and hence capable of passing through the capillaries; second, the presence of actinomyces in the spleen and in heart-walls, etc., where it could not well gain admission except through the circulation. The external manifestations form no criterion as to internal distribution of the ray fungus, so that an animal with but a small external tumor or a mere cicatrix, after undergoing a so-called cure, may show distinct evidence of the disease in various internal organs, and since the parasite is microscopic, it is impracticable to say that a portion of an affected animal is free

from invasion, hence the meat should be condemned as unfit for human food.

The defense also submitted in evidence a report made to plaintiffs by Prof. E. A. A. Grange, State Veterinarian of Michigan, Dr. V. T. Atkinson, deceased, late State Veterinarian of Wisconsin, and Dr. Vogel, of Chicago, who were called as experts to examine the cattle in question, and reported that while the disease was doubtless actinomycosis, they did not consider it "dangerously " contagious, in the sense that it was readily transmissible.

They further submitted a report of veterinarians Casewell, Scott, Page and Williams of an examination of the cattle in question, and of post-mortem examinations on three of the affected animals, which showed the disease in various internal organs.

Evidence was introduced in behalf of plaintiffs, citing cases where affected animals had co-habitated with healthy animals for long periods of time without result, and the defendants introduced considerable similar evidence to prove the contrary, by citing cases where a large percentage of certain cattle herds had become affected apparently through cohabitation with diseased animals.

The ordinary evidence as to the history of the case in question, disposition of the affected animals, official acts of the commissioners, etc., was introduced. After being out two days, the jury reported that they could not agree, and hence were discharged. It is probable the plaintiffs will continue the case and demand another trial.

It is to be regretted that some decision was not reached by the jury, in order that the case might be appealed to the higher courts and some precedent established for dealing with actinomycosis in the future.

The question of the possibility of rendering the flesh of actinomycotic animals fit for food by thorough cooking did not enter prominently into the case.

The two principal questions contested were the transmissibility of the disease and the fitness of the carcass of the affected animal for human food, without relation to cooking.

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening, October 28th, 1891, at 7:30 o'clock, President L. H. Howard in the chair.

Members present: Drs. Bryden, Blackwood, Burr, Howard, Hadcock, Marshall, Osgood, Winchester, Winslow and the Secretary. Honorary member: Dr. Stickney. Guest: Dr. E. F. Harrington.

Minutes of the last meeting (held in June) read and accepted.

Dr. Osgood thought that the name of anyone proposed for membership should lie over a month before being balloted upon, so as to give ample time for looking up the applicant's record.

Dr. Bryden thought that we ought to act in accordance with our State charter. At the same time if there was any bugaboo it ought to be gotten rid of. The question is upon suspending the clause requiring a thesis as a requirement for admission, for a period of two years from last April.

Ballot taken. Resulted in seven votes, all in the affirmative.

The Secretary reported a letter from Dr. Donaldson, of Clark University, acknowledging receipt of the spinal cord of the old pony killed for springhalt at Ward's wharf last summer, and saying that he would report the result of the microscopic examination as soon as it was completed.

The committee, consisting of Dr. Winchester and the Secretary, which met a committee from the Board of Control of the State Agricultural Experiment Station at Amherst, consisting of Pres. Goodell and Secretary Sessions, of the State Board of Agriculture, on Thursday, July 2d, at the Commonwealth Building, Boston, to talk over the advisability of appointing a veterinary pathologist at the State Experiment Station, reported that the committee that they conferred with

were favorably impressed with the idea, and that President Goodell was to formulate a plan of procedure, but that unfortunately he had gone abroad for his health and could do nothing about it at present.

The Secretary reported having seen Mr. Sessions that afternoon, who said that he had not yet given the matter any thought, as he was waiting to see what President Goodell advised doing.

Motion made by Dr. Osgood, and seconded by Dr. Winslow, that a vote of thanks be given the committee, and that its report be accepted, and that the committee be continued with full power to act. Carried.

Application for membership received from Dr. E. F. Harrington, and referred to the Executive Committee.

The Secretary reported the resignation of Dr. A. W. Clement, of Baltimore, who resigned because he had not lived in Massachusetts for three years, and therefore failed to avail himself of the benefits of membership in the Association. Moved by Dr. Winchester, and seconded by Dr. Osgood, that Dr. Clement's resignation be accepted with regrets. Carried.

Dr. Osgood then filed a request in writing with the Secretary, to still further amend the Constitution by providing that Article III. shall be changed, so that applications for membership in this Association must be made in writing to the Secretary, with the presentation of the applicant's credentials. Said application must be presented to the Association at its next regular meeting, at which time the Secretary is to present the applicant's credentials to the Executive Committee, which after examining the same, shall report to the meeting. If favorably reported on, the name of the applicant shall be laid on the table till the next regular meeting before being voted on. During this time the Secretary shall notify members of the Association in writing of applicants to be voted upon at each regular meeting. If accepted, the Secretary shall notify the applicant of the same.

Dr. Stickney reported the case of recovered cœcal fistula in the bay mare killed at Ward's wharf this afternoon.

A vote of thanks was given Drs. Stickney, Saunders and

Peters, for their interest in buying the mare and keeping her until now for post-mortem examination. A number of the members expressed their willingness to contribute their share towards the expense of the same. (A detailed report of the case will be written later, and a copy kept for the Association, and copies given the veterinary journals).

Dr. Winchester then reported four very interesting cases, as follows: Fistula of Steno's duct in a horse; two spleens in a colt, one abnormally large; a case of canine rabies, having a long incubative period; and peritonitis in a horse, following the rupture of the peritoneal coat of the stomach.

Moved by Dr. Blackwood, seconded by Dr. Marshall, that Dr. Winchester be given a vote of thanks for recording these cases. Carried.

Meeting then adjourned.

AUSTIN PETERS, *Secretary*.

Regular meeting of the Massachusetts Veterinary Association held at 19 Boylston Place, Boston, Wednesday evening, November 25th, 1891, President L. H. Howard in the chair.

Members present: Drs. Bryden, Blackwood, Becket, Burr, Emerson, Hadcock, Howard, Marshall, Winchester, and the Secretary. Honorary member: Dr. Stickney. Visitors: Drs. W. W. Noyes and E. T. Harrington, and also Mr. Kendall, of Sterling, Mass.

Minutes of last meeting read and accepted.

It was moved to amend the Constitution by providing that names of applicants for membership be laid on the table for one month before being acted upon. Ballot taken, resulting in nine votes cast, all in the affirmative.

Committee appointed to confer with a committee from Board of Control of the State Experiment Station, reported progress. Motion made by Dr. Hadcock, and seconded by Dr. Blackwood, that report be accepted. Carried.

Executive Committee reported through the Chairman, Dr. Marshall, favorably upon the credentials of Dr. E. T. Harrington. Ballot taken on the question of his admission resulted in eleven votes cast, all in the affirmative.

Secretary directed to write personal letters to Dr. J. M. Parker, of East Rindge, N. H., and to Dr. W. A. Hitchcock, of Malden, applicants for membership, informing them of the conditions of membership in this Association.

Moved by Dr. Winchester, and seconded by Dr. Hadcock, that the Secretary have a number of copies of the Constitution printed, together with a number of circulars and forms, and mail them, at his discretion, to members of the veterinary profession. Carried.

A paper upon "Springhalt," by Dr. Williamson Bryden, was then read, being a report upon his treatment of the old black gelding kept for experimental purposes for this Association by Andrew Ward, of the N. Ward Co's wharf, Boston, and killed for autopsy July 27th, 1891, together with the essayist's views upon this affection.

A spirited discussion followed, in which the members and visitors took part. Most of those present did not agree with the essayist in all of his views, especially the idea that in springhalt, spavin and the like, the first change is in the foot, and that the other troubles are consequent upon it, believing, on the contrary, that the alteration in the shape of the foot is the result of the disease above. Nearly all who had seen the horse before and after treatment by Dr. Bryden, admitted that there was an improvement in his condition at the end of the course.

The Secretary read a note from Dr. H. H. Donaldson, of Clark University, in which he reported that he had nearly finished the microscopic examination of the horse's spinal cord, from the lumbo-sacral region, without finding any pathological changes. If before finishing the examination any changes were found, it would be reported to the Association.

Dr. Howard brought the bones of the near hock, the cuboid scaphoid, large and small cuneiform, which were ankylosed together and to the metatarsal bone. There also appeared to be a little ulceration upon the trochlea of the astragalus, but the bones had been soaked out in rather a strong pickle, rendering this uncertain.

Moved by Dr. Marshall, and seconded by Dr. Becket, that the essayist be given a vote of thanks. Carried.

Meeting then adjourned.

AUSTIN PETERS, *Secretary*.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Keystone Veterinary Association was held at the College of Physicians and Surgeons, Thirteenth and Locusts Streets, Philadelphia, November 7th, 1891.

Meeting called to order by the President, Dr. W. Horace Hoskins.

The following members answered the roll call: Drs. W. B. E. Miller, H. P. Eves, Chas. T. Goentner, Alex Glass, W. H. Hoskins, J. B. Rayner, W. S. Kooker, Chas. M. Cullen, R. G. Webster and W. B. Werntz.

Minutes of previous meeting were read and approved. The President appointed Drs. Eves, Rayner, Miller and Goentner to fill vacancies caused by absence in the Board of Trustees. A recess of fifteen minutes was taken. Upon reconvening the Board of Trustees reported adversely upon the application of Dr. MacFayden for associate membership; and advised the acceptance of the resignation of Dr. M. W. Drake. On motion the report of the Board of Trustees was accepted. Dr. Glass, the essayist of the evening, read a very instructive paper on "Bench Show Distemper in Dogs."

Dogs gotten in the very pink of condition are sent from all parts of the country to the show. After or during the latter part of the show they manifest a disinclination to feed, are drowsy, languid, the coat unthrifty in appearance, eyes watery, nose dry, pulse rapid, temperature high, with, in some instances, cough. These constitute the general symptoms of bench show distemper, which is distinguished from the real or genuine distemper by the symptoms, in the majority of cases, being of a milder form. We have three different conditions resulting from bench show distemper which are of a serious nature. First, pneumonia. 2d, the abdominal. 3d, the nervous.

In the first or pneumonic condition we have all the symptoms observable in other domestic animals, with the additional symptom observable in dogs suffering with lung trouble, that of always remaining in a sitting position. In the second, or abdominal condition, we have enteritic symptoms with either a diarrhœa, dysentery, or the opposite, excessive constipation. This condition as well as the first requires very careful nursing, with rational treatment, and the result will be a complete restoration to health. The third or nervous condition is the one in which the results of treatment are generally very unsatisfactory. The causes of bench show distemper in a great measure are due to the sudden change in the feeding and housing of the dogs. The Spratt's system of housing dogs at shows is a prolific source of contagion. The benches or cages are moved from one place of showing to another throughout the whole country, with only a very superficial cleansing with water. The percentage of cases of bench show distemper would be much less if these kennels were thoroughly disinfected, and more care given to their cleansing.

A vote of thanks was tendered Dr. Glass for his paper.

Dr. R. G. Webster reported the following cases: On the 12th of April, 1891, was called to attend five cows of a man's herd which he said were acting very strangely. I found the five cows in stable, and at a glance they appeared to have nothing the matter with them, as they were eating hay at the time. Their coats were glossy and in fair condition, but upon a closer examination found a very serious trouble. Accidentally touching one upon the back she almost fell to the ground, losing all power and control of herself; her legs were almost useless. She then showed a very wild look out of her eyes, as though in distress. On taking my hand off she soon went to eating again. Temperature and respiration were normal, pulse weak but not fast. Could handle her anywhere over body except spine, without her showing any distress. The history the owner gave was that the week before he had an old cow to get down who could not rise again. He, thinking she was paralyzed from old age, killed her, thinking nothing

more about it until four days later, when on going into the stable in the morning he found the five as before mentioned. I asked what he was feeding, and he said malt dust and clover hay were all that they were getting. Asked him in what quantity he was feeding the malt; he said that he had been feeding it all winter with corn meal, but his corn running out about a month before had been since then feeding the malt alone; was feeding one ton every ten days to twenty-seven cattle, soaking each feed for twelve hours in three hundred quarts of water. I looked at hay and malt, but could see nothing wrong with either, or anything about the barn or yard, as everything was clean. I, thinking the trouble arose from feeding malt too heavily, had it discontinued, and gave the cows tonics. I looked at the rest of the herd out in the lot before going away; they appeared to be all right. Did not see them on the 13th. On morning of 14th the owner was at my office at 6 A.M. reporting eight more affected in the same manner. I advised him to send for State Veterinarian Bridge, which he did. I got to his place about 10 A.M. He had turned the cows out into the lot. I looked them over and found the whole twenty-seven more or less affected, two not being able to get out of the stable, one down, not able to get upon her feet, but was eating; was very hungry; gave her a bucket of water; drank it down without any trouble in the least; gave another bucket; drank it; wanted more; gave her some dry bran; licked at it as any healthy cow would. Her temperature and respiration were normal, pulse weak. The other, apparently the weaker of the two, could get up and down; was hungry and thirsty as was the first.

In looking at cows in field they would be eating grass, then all at once stop, stamp their feet, kick at belly, then start to run as if bees were stinging them; would elevate tail over back and run this way a few minutes, then stop and go to eating again. They did this every five or ten minutes. Others not so bad would stamp their feet; did nothing for them. Dr. Bridges came on the 16th, examined and diagnosed the trouble to be in the clover hay, which was at once

stopped. Gave each cow large doses of mag. sulph., followed by tonics.

On the 17th I for first time saw the cows come out of stable. Here was where the trouble showed itself the most, coming from dark stable to the light. The first few steps the fetlock would hardly bear them, would turn and almost throw them down. As soon as they came to the light, they would start back, stare around, blink their eyes, were not able to distinguish objects. One cow especially could hardly get through an opening twelve feet high by fifteen wide, making several attempts before getting out. She would start out, then step back, start again, bend down until belly almost touched the ground; after doing this several times she got down upon her knees, rested in that position a few seconds, then got up and passed out without any trouble and went to eating. She did this three mornings in succession before improving. The whole herd went through these actions more or less in getting out of the stable; all were very thirsty; drank a great deal of water. Of the two which were in the stable, the one that was the weakest but able to stand got down in the night and died, while I was looking at the others. She ate some hay and drank water early in the morning. The other one still down, but eating and milking some. I saw them again in the evening; were apparently much better after standing out all day. The stiffness and trembling was improved;

18th.—Came out of stable much the same as yesterday, but did not seem so nervous, and it soon passed off after being out. The cow that had been down since the 14th died during the night.

I held a post-mortem on the two which had just died. The first thing noticed upon opening them was a peculiar smell, different from what I had ever experienced in any other post-mortem. As near as I can describe it, it was like rotten eggs. I found all the internal organs in a normal, healthy condition except the stomachs. The mucous membrane was almost entirely separated from the wall of the rumen and manyplier, leaving it of a purplish hue, looking very much as if it had lain in water for several days. Both

cows were the same ; stomachs were in the same condition.

19th.—Saw them come out of stable ; the whole herd came out better than yesterday ; had hay in bunches about the lot ; cows chased and hooked each other in their eagerness to get at it. An old cattle dealer who was looking at them at the time remarked that those cows were not sick, as sick cows would not eat in that way. 20th.—When cows were coming out of stable I detected one that was very starey. I had her at once put back, and gave mag. sulph. 1lb. The herd generally seemed more stiffened up, not as well as yesterday. Thinking the tonic too strong for the condition the stomach was in, changed it. Put lime in drinking water, as they were drinking immense quantities of it, and then bloating up ; would go to water trough looking thin, in half hour would be bloated up so as to be hardly able to get around.

Some of the man's neighbors told him that if he would only turn his cows out upon good pasture it would be the end of it. He thought he would try one first. This one had been very bad, but improving nicely ; he turned her out into his lawn for about one hour, where the grass was good. She then went to the water, drank, but did not get ten feet from trough before she fell. She lived for a week, but did not get upon her feet ; at the end of that time, seeing no improvement, had her killed. 21st.—Did not see them come out of stable ; bloated some after drinking water. 23d.—One old cow which I had advised being kept out of stable all the time had been getting along nicely. The night being cold, owner put her in ; she got down in the night ; could not rise in the morning ; lived two days, then killed her. I did not see them again until the 27th. They were then all doing well, picking up in flesh and giving almost as much milk as before. The four cows which died were his best milkers, and he was feeding them more than the rest of the herd.

Dr. Hoskins was of the opinion that the trouble was due to some mould fungus or germs, which had produced the result, similiar in many instances to the so-called cerebro spinal meningitis in horses. Dr. Rayner was sure that it was due solely to the feeding of malt dust, but could not ex-

plain what there could be in the food that would produce the results cited. Dr. Kooker gave the composition and manner of preparation of what is sold as malt dust.

The cases cited were of great interest to the members present, and remarks were made and questions asked by every one present.

The subject of mycotic stomatitis was brought up for investigation. There were over three hundred cases reported as having been treated by the members present. Dr. W. B. E. Miller stated that it was due to a vegetable irritant, likely of the ergot group. All cases were of a mild character, none of which proved fatal.

Treasurer reported collection of dues for evening thirty-nine dollars.

Dr. Hoskins announced that a drug and its uses would be discussed at the next meeting.

On motion adjourned.

W. H. HOSKINS, *President*.

W. S. KOOKER, *Secretary*.

ILLINOIS VETERINARY MEDICAL ASSOCIATION.

(The Illinois State Veterinary Medical Association held its regular annual meeting, Nov. 17th and 18th, at the Sherman House, Chicago, Ill., being presided over by President S. S. Baker, of Chicago.)

On account of unavoidable absence of the Secretary and Treasurer, the President appointed Dr. M. Wilson Secretary *pro tem*. and Dr. N. I. Stringer Treasurer *pro tem*.

The roll being called, the following members responded: Drs. A. H. Baker, S. S. Baker, G. Z. Barnes, H. E. Delavergne, Thos. Hope, J. A. Judson, O. J. Lanigan, W. J. Martin, H. W. Parkinson, C. A. Pierce, H. G. Pyle, J. F. Ryan, C. E. Sayre, J. S. Spangler, R. W. Story, R. J. Withers, S. V. Ramsey, A. G. Alverson, D. McIntosh, N. I. Stringer, M. Wilson, R. G. Walker, F. S. Schoenleber, T. J. Gunning.

The minutes of the previous meeting were read and approved, and correspondence from Drs. J. T. Nattress, J. F.

Pease, Paul Paquin and S. H. Kingery were read, regretting their absence.

President S. S. Baker then gave his annual address, making comments on the past history of the Association, and suggesting new ideas for improvement in the future, as follows:

GENTLEMEN:—(This Association has entered on the ninth year of its existence. We have held meetings during these nine years when we have had barely a working quorum, and at one meeting in particular I remember, held at Joliet in 1885, there were but six members present—not enough for a quorum—but we did more business at that meeting than was ever done before or since.) We revised Constitution and By-Laws, etc., etc., only to have our work thrown out at the next meeting as illegal, but of late we have had no such trouble. We have gained in the number of our members, and the zeal with which they attend has grown with the increased membership. (The meetings of this Association are not merely for the purpose of mutual admiration, but for a specific purpose, viz.: The cultivation of fraternal feelings among veterinary practitioners, the elevation of the veterinary science to an equal rank with other scientific branches of medicine, the mutual improvement of its members, by the exchange of ideas, the presentation of such cases of diseases, together with their treatment, as may be worthy of note, and to provide ways and means to secure legislation to regulate the practice of veterinary medicine and surgery in this State, the importance of which is patent to all.) The importance of such legislation is not so much for the protection of the qualified practitioner as for the protection of the agriculturist against the ignorant empirical practitioner.

Because we failed once in securing legislation is no reason we should give up in despair. The medical profession strove for ten years before they got a bill passed to regulate the practice of medicine; therefore I would urge upon you the appointment of a committee for that purpose and each of you get your representative interested in the work and keep at it till we get the desired legislation.

(The advancement in the veterinary profession in

the last few years has been great. We are now recognized by the Federal Government and by nearly all State Governments. We have members of our profession who hold federal appointments not only at Washington, but at all the important seaports and also in England. Some of the States have veterinarians at the slaughter houses, to inspect the cattle before they are killed and the meat afterwards. A short time ago the Federal Government gave each State that had a university \$15,000 for the purpose of making original investigations in the diseases of animals. Nebraska established a laboratory, and engaged a man for that purpose, the result of which you all are well aware of. What has Illinois done? Nothing. The \$15,000 was given the University at Champaign and we as veterinarians have a right to demand that something be done with that money.

The success of our meetings lie entirely with the members themselves, in the interest they show in attendance and in participation in the active duties of the Association.)

I sincerely hope that with our revised by-laws and new code of ethics, new life will be instilled into the members, that more interest will be taken in the working of the Association, and I also hope that each member will consider himself a committee of one to secure new additions to our membership, thus increasing our numbers till we have all the qualified practitioners in the State within the ranks of the Association.

I would also urge upon you the importance of becoming members of the United States Veterinary Medical Association, thereby assisting to make that body a truly national one. The State Associations can only hope to have a local influence, but the United States Veterinary Medical Association is bound to wield an influence that will be felt throughout the length and breadth of the land. I think it is only a question of time when it will be a requisite condition to qualify a man to become a member of that body, that he be a member in good standing in a State Association.

(The benefits to be derived from these meetings are many; a man gets an opportunity to gain new ideas; it takes him

out of the old rut he has been running in; gives him a chance to get the dust blown off his best suit of clothes; he sees new faces, puts more money in circulation, and if he is not troubled with big head (not lumpy jaw) he will learn something; he enjoys himself and goes home with fresh vigor to again take up the task of life.)

I tell you, gentlemen, in these days of microbes it is not safe for a man to stay away from a meeting, where he may learn something about that which is at the bottom of all diseases, for everything is "germs" now, even we ourselves are full of them, and to prove it, I will with your kind permission add something taken from the *Texas Health Journal*:

"Man, born of woman, is of few days and full of microbes. He standeth in the midst of Micro-Kock-I, and gnaweth on the hock-joint of the razor-back hog until filled with trichina. It has been said: 'God made man a little lower than the angels,' and he hath been a little lower ever since. In cities the food of man is stale vegetables, hydrant water and sewer gas; in the country he groweth 'phat' on pea soup and branch water; at other times he maketh himself sick on sauer-kraut and sendeth for the good physician, who giveth him ipecac and calomel until he cougheth his teeth out. Animals have instincts and man outstincts, neither of which smelleth like a tube rose.

"From teething to unteething is the longer life of man. After the latter he gummeth his soup and drinketh his dried beef. His younger days are filled with wind, but in his old age the wind is knocked out of him. He drinketh bug-juice until his nose shineth with a ten-candle-power, and he smoketh the vile weed until he snorteth—when the wind changes and he smelleth his own breath. Verily the seed of woman stone-bruise his heel and thumpeth his nose against the screen door. Yea, man is of but few days, and is filled with tanglefoot."

(I beg to thank you, gentlemen, most sincerely, for the honor you conferred on me in electing me President of this Association for the past year. I wish also to thank the different members of the Programme Committee for their great

yourself

assistance in aiding me to place before you a programme which I feel will be both interesting and instructive.)

The Secretary being absent no report was given.

A report from Dr. J. T. Nattress showed a cash balance on hand.

There being no committees to report, the President called on Dr. M. Wilson to read his paper on "Influenza."

After a brief discussion regarding the treatment, the discussion was closed on motion.

Article IV, Section 1, of the Constitution, which was revised at last meeting, was adopted on vote of yeas and nays.

The revised By-Laws, except Article IX, were also adopted.

On motion, Article IX of the By-Laws was laid over until next day.

After a ten-minute recess, the President called on Dr. G. Z. Barnes to read his paper on "Tetanus."

After discussion, relating almost entirely to the various forms of treatment, the discussion was closed on motion.

Dr. A. H. Baker was then called upon, and the subject he chose was the post-mortem appearance of the cattle disease, which Dr. Caswell, Dr. Williams and himself investigated in various parts of the State this past summer.

On motion, adjourned until next morning.

Nov. 18th, 1891.

The meeting being called to order at 10 A.M., the President called on Prof. McIntosh to read his paper on "Parturient Apoplexy."

After a lengthy discussion regarding the pathological cause and the treatment, the discussion was closed on motion.

Dr. Schoenleber was then called upon to read his paper on "Veterinary Agricultural Editorials."

After some remarks upon the subject by the members, the discussion was closed.

A letter was read from Dr. Williams, regretting his inability to be present, and tendering his resignation as a member of the Association on account of his being a non-resident of the State.

Dr. Williams' resignation being accepted, on motion of Dr. Stringer, seconded by Dr. Ramsey, he was made an honorary member.

The Secretary was instructed to write a letter to Dr. Williams, testifying sincere regret at his having to resign his active membership, and thanking him for his past labors in behalf of the Association.

Article IX of the By-Laws—the Code of Ethics—was read, and on motion of Dr. Ramsey, seconded by Dr. Delavergne, was adopted.

The meeting then adjourned until after dinner.

The afternoon session being called to order, Dr. Withers was called upon to read his paper on "The Use of Antiseptics."

After some remarks upon the use of antiseptics in the various surgical cases, the discussion was closed.

Dr. Lanigan then gave a case report.

J. A. McDonnell, M. D., was then called upon, and read an excellent paper on "The Veterinary Profession," and was followed by C. G. B. Klophele, M. D., who read an exhaustive article on "Tuberculosis."

A vote of thanks was extended to Drs. McDonnell and Klophele, and both were made honorary members, as a recognition of their endeavors to benefit the veterinary profession.

The following gentlemen were then proposed for membership: Drs. F. H. Anderson, (Ont., '89), Evanston; Otis Barnett, (Chic., '91), Edwardsville; Walter Allen, (Chic. '90), Dunlap; A. M. Story, (Ont., '91), Buda; F. L. Brown, (Chic., '89), Galesburg.

On motion of Dr. Stringer, seconded by Dr. Gunning, they were unanimously elected.

The following officers were then elected for the ensuing year: President, Dr. S. S. Baker; Vice-President, Dr. S. V. Ramsey; Secretary, Dr. M. Wilson; Treasurer, Dr. N. I. Stringer; Censors, Drs. Lanigan, Nattress and Walker.

The President appointed the following standing committees: Committee on Programme, Dr. Pyle, Schoenleber and

Story ; Committee on Arrangements, Drs. Lanigan and Gunning ; Committee on Legislation, Drs. Walker, Nattress and Pease ; Committee on Membership, Drs. Stringer, Thomson and Alverson.

It was moved and seconded that a committee, consisting of Drs. Pyle, Schoenleber and Parkinson, see that the Code of Ethics be complied with by members of the Association, and report at each meeting. Carried on motion.

A proposition, signed by three members, to change Section 3, Article II, of the By-Laws, relating to the number of members necessary to form a quorum, from the present number (ten) to five, was laid on the table.

A vote of thanks was tendered the retiring officers.

The Association adjourned to meet in Peoria at the call of the Committee.

MATHEW WILSON, M.R.C.V.S.

Recording Secretary.

COMITIA MINORA U. S. VETERINARY MEDICAL ASSOCIATION.

A meeting of the Comitia Minora of the United States Veterinary Medical Association will be held at Hotel Royal, 6th Ave. and 40th St., New York, on Saturday, February 20th, 1892, 8 p. m.

Arrangements for the International Veterinary Congress at Chicago, 1893 ; and the place of meeting of the Association for 1892 will be considered, in addition to matters of routine business.

Suggestions and communications for the Comitia Minora should be submitted to the Secretary.

By order of the President,

W. H. HOSKINS, *Secretary.*

R. S. HUIDEKOPER.

NOTICE.

The second annual meeting of the New York State Veterinary Medical Society will be held at the Vanderbilt House, Syracuse, N. Y., January 12, 1892.

The meeting will be called to order at 10 o'clock, A. M., January 12, and continue until all business is finished. All veterinarians throughout the State are earnestly requested to attend, as matters in which all are deeply interested will be brought up for discussion.

Remember the date, Tuesday, January 12, 1892.

N. P. HINKLEY, D.V.S., *Secretary*,
395 Ellicott Street, Buffalo, N. Y.

OBITUARY.

DR. GEORGE BRIDGES.

This most estimable man passed away yesterday at his home on Isaacs Street a little past the meridian hour. He was born in New York City, Nov. 1st, 1850. His parents dying in his early youth, he was sent to boarding school, and on arriving at age, embarked in business and went to Utah with a son of Brigham Young, but his love of animals, and especially the horse, led him to return to New York and enter the American Veterinary College. He came to Norwalk six years ago and opened an office, just prior to his graduation. His thorough mastery of his profession and his deep and tender sympathy for a dumb animal in distress, with his honest, genial, personal attributes, at once opened up to him a wide and successful professional business. He was never strong and his exposure and devotion to his profession soon began to tell upon his health and strength.

Early last year he became aware that consumption was threatening his life and on the 8th of last December he went to Aiken, S. C., and remained South till late this spring, when he returned home and to the devoted care of his wife and daughter. Here, fully conscious of his condition, he waited patiently and uncomplainingly the inevitable hour of his departure. Last fall he united with the First Congregational Church, with which his wife and daughter were already connected, and his religious faith and hope were his sure solace and support as he descended to the dark river of death, on

whose other shores he could hear his Saviour's welcome, "Well done, good and faithful servant, enter into the joy of your Lord." No man ever grew more rapidly into the confidence, respect and love of an entire community. His frank and honest nature and kindliness of heart won all other hearts, and living he was everywhere beloved and now that he is gone, he is as widely and sincerely lamented.—*From Norwalk (Conn.) Paper.*

DR. JOHN SUTTON.

The veterinary profession has lost one of its most enthusiastic members in the death of Dr. J. Sutton, on October 28th, at Kalamazoo, Mich. Although not a graduate of a veterinary college, he followed his chosen profession in a manner alike creditable to it and himself. During the war he became afflicted with deafness, which later on necessitated his leaving the veterinary college, after nearly completing the two years' course, having secured, during the junior year, first prize in anatomy. His death was due to stomach troubles, from which he was a great sufferer for several years.

NOTICE.

Dr. E. D. Roberts, of Janesville, Wis., has been appointed to succeed Dr. Atkinson, recently deceased, as State Secretary for Wisconsin of the United States Veterinary Medical Association.

POSITION WANTED.

A D.V.S. with hospital experience, wants position as assistant surgeon. Address

SABISTON & MURRAY, Publishers,

916 Sixth Avenue, New York.

AMERICAN VETERINARY REVIEW,

FEBRUARY, 1892.

EDITORIAL.

ARMY VETERINARIANS.—For some reason there seems to have been a lull in the agitation of the question of reform in respect to the position and rank of veterinarians in the United States army, a matter which at one time appeared to be likely to excite much interest in veterinary circles. In fact, since the last report of the committee appointed by the United States Veterinary Medical Association, which seemed to promise some good results, nothing has recently been heard on the subject. The matter has not, however, been forgotten, nor is all hope to be abandoned, especially in view of the great encouragement derived from the officers of the War Department, to whom the subject has been presented, and who seem inclined to entertain rational views of the case. The reform is too necessary, and involves too much of beneficial change, not alone to veterinarians, but as affecting the proper and efficient administration of the details of the service, to be ignored, and though it may cost a large expenditure of time and patience to secure it, the success of the effort is sure to be realized in the end.

We have received the following communication from a committee of army veterinarians, engaged in this effort to promote their guild, and it is with great pleasure that we lay it before our readers, and bespeak their active co-operation with the committee in compassing the desired object.

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EFFORTS OF A COMMITTEE OF ARMY VETERINARIANS TO BETTER THE CONDITION
(THROUGH LEGISLATION) OF THE MEMBERS OF THE PROFESSION IN THE
SERVICE.

The frequent failure of those attempting to better the condition of the army veterinarian through the national legislature had almost discouraged us from any further efforts in this direction until the thought occurred to us, that if a thing was worth having it was worth fighting for again and again, and that the harder the fight—when success crowned the effort—the greater the glory. Having taken this for a text, a correspondence was started between the veterinarians in the service, asking each other what it was best to do in the premises. As a result of this correspondence, the following bill, which originated with Dr. M. J. Treacy, M.R.C.V.S., Veterinarian 8th U. S. Cavalry, was submitted to each veterinarian in the service, asking for his suggestions as to changes, etc., in its provisions. The bill, as it appears below, met with the approval of all, with one exception, this exception being from John Tempany (an empiric), who at present fills the position of senior veterinarian in the 9th U. S. Cavalry; his objection was that if the bill became a law it would give him a rank he did not like, and, although the bill increased his wages \$25.00 per month, still it deprived him of fuel and light amounting to about \$4.00 per month.

The following is the bill:

A BILL TO FIX THE PAY AND ALLOWANCES OF THE VETERINARIANS OF THE ARMY
OF THE UNITED STATES.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled:

SECTION 1. That the pay of the Veterinarians of the Army of the United States shall be One Hundred and Twenty-five Dollars (\$125.00) per month with all the allowances of a Second Lieutenant of Cavalry.

§ 2. That the number of Veterinarians in the Army of the United States shall not exceed two (2) for each regiment of Cavalry.

§ 3. That hereafter all appointments as Veterinarians in the Army of the United States shall be confined to graduates of recognized Veterinary Colleges of the United States, and candidates for such appointments shall be citizens of the United States, and shall be required to pass such examination as the Secretary of War shall direct.

§ 4. That all veterinarians—employed as such—in the Army of the United States at the passage of this act shall be immediately reappointed without examination under the provisions of this Act.

§ 5. This Act to take effect immediately.

When it was ascertained that the bill met with universal approval—with above exception—a subscription of not less than \$3.00, and not to exceed \$5.00, was requested from each member in the service. The response was prompt, each individual enclosing \$5.00, with the exceptions of Tempany, 9th; Service, 10th, and Waugh, 3rd Cavalry (the latter gentleman, however, while not wishing to subscribe at this stage, promised to pay the committee a full month's salary, the first he received under the new system, if bill became a law), this subscription

to be used to defray expenses of a trip to Washington by one of the committee, with the object in view of securing the endorsement of the War Department before bill was introduced in Congress. One of the committee made the journey to Washington, armed with a letter of introduction to one of the powers that be, through the kindness of Dr. John Robertson, 2d U. S. Cavalry. The bill in its present shape received the hearty endorsement of Major-General Schofield and Adjutant-General Kelton, on November 24th, 1891, each of them promising to give it his hearty support, and giving permission to use his name in this connection. The result of this trip was promptly reported to all, and a scheme for future efforts proposed and accepted, with the usual objection from Tempany of the 9th only. At this stage Dr. Treacy of the 8th had bill introduced twice in the Senate (the numbers are S 89, Senator Collum, and S 885, Senator Kyle) and twice in the House; the numbers in latter body will be given later on. It was now thought advisable that a member of the committee should visit Washington and appear before the committees of both Houses on Army Affairs to plead our cause and state the necessity for the change. The necessary funds for this purpose being lacking, the committee was undecided what steps to take (it not being considered advisable to ask our members for further subscriptions) when again Dr. Treacy asserted himself with a check for \$175.00, to be used as thought advisable by the committee in defraying expenses in this matter. Simultaneously with the subscription from Dr. Treacy came one each from Dr. Turner, 6th, and Dr. Robertson, 2nd Cavalry.

A member of the committee is now in Washington in the interest of the bill, and it is anticipated by all—bearing in mind the promises of support and favorable endorsements we have had from different sources—that the bill will become a law. While the committee appreciates the efforts of the U. S. Veterinary Medical Association in this direction, and while it returns its sincere thanks to that body for its work in behalf of the army veterinarian, still it cannot but deplore the fact that not a single army representative was appointed on its committee on army legislation last year, although there are four army veterinarians members of the Association and the members of the service were probably as good judges of what they required in the way of legislation as absolute outsiders, still (although this movement of the army veterinarians is an independent one) we would request the Committee of the Association to interest itself in the passage of our bill. It has been asserted by members of the profession that army veterinary legislation would never be successful as long as the majority of army veterinarians were non-graduates. In reply to this statement we would say that there are only two non-graduates in the service, the remainder being representatives of the foremost veterinary colleges in Canada, England and the United States; the authorities have long recognized the fact that something should be done to better the condition of the army veterinarian, and in the present movement the veterinary force is a unit—with the one objection quoted—and have the approval and promised support of the war authorities. In conclusion the committee takes this opportunity of thanking the members in the service for their hearty co-operation, and to assure them that a strict account of all monies received and expended will be forthcoming in due time; it also thanks the REVIEW for its many vigorous efforts in behalf of the army service and

requests a continuation of these services; it would ask Drs. Treacy, Robinson, Corcoran and Turner to accept its thanks for past favors and trusts that they will still continue to interest themselves in the present movement. Trusting our efforts may meet with success, we remain

Yours sincerely,

THE COMMITTEE.

January 15th, 1892.

N.B.—The committee has recently received numerous inquiries in reference to another bill lately introduced and bearing on the subject. We beg to say that the bill is unworthy of serious notice, and only serves to show the calibre of its originator.

MAINE *vs.* MASSACHUSETTS.—A measure of a very radical character connected with sanitary medicine has just been adopted by the State of Maine, which is, we think, destined to have a most important bearing upon the history of veterinary sanitary science in the United States, in relation to securing and maintaining the control of tuberculous cattle.

This measure is nothing less than the establishment of a quarantine against all cattle sought to be imported into that State from Massachusetts.

According to the circular which we have received, the motive of this stringent measure is derived from the fact of the wide prevalence of tuberculosis in Massachusetts, a condition which, although ignored by a few, has, we believe, been acknowledged by many of the veterinarians of that State. Our correspondent and friend, Dr. G. Bailey, who is State Veterinarian, has worked the subject with great energy, and it is no doubt due to his efforts, through the serious statistics which he has labored to collect and array as proofs of his case, that the outcome, in this notice of quarantine, is to be attributed.

Whether this quarantine can be enforced or not, our knowledge of inter-State rights and policy is too limited to qualify us to judge; but we cannot repress our doubts of the efficacy of such a measure in diminishing or abolishing the existence of tuberculosis.

But there is one fact which cannot in any case be ignored, to wit, that to veterinary scientific zeal and public spirit is due the inauguration of the *first official action* looking to the limitation and ultimate extirpation of the scourge in question

—for to a veterinarian belongs the honor of sounding the first bugle note of war against this fearful disease, accounted by so many to be the principal source of contagion and death amongst the cattle-herds of the country.

And now that the Bureau of Animal Industry in Washington has nearly completed its work on pleuro-pneumonia, why will it not turn its attention next to tuberculosis, and thus strike another mighty blow in behalf of the widespread and almost universal interests whose wealth is now in such constant danger of destruction.

The notice of quarantine issued by the Cattle Commissioners of Maine reads as follows:

TO WHOM IT MAY CONCERN.

Public notice is hereby given, that in consequence of the prevalence of tuberculosis among Massachusetts cattle, as disclosed by the official reports of their authorities, supplemented by post-mortems held in Maine of cattle purchased in that State for dairying and breeding purposes, the Cattle Commissioners of the State of Maine believe that the public health of its citizens and the welfare of this commonwealth demand that a rigid quarantine (against all cows whether in milk or dry, and all bulls for breeding purposes) be maintained on and after January 1st, 1892, until further notice, and all such cattle entering the State of Maine thereafter will be subject to quarantine at the owner's expense; provided, however, that the above regulations shall not apply to western cattle coming through Massachusetts into Maine for the purpose of slaughter.

The attention of all persons is directed to Sections 2, 3, 4, 5 and 7, of chapter 138, of the Public Laws of Maine, 1887, applying to cattle affected with contagious diseases, and which will hereafter be rigidly enforced.

(Signed)

THOMAS DAGGET, President.

F. O. BEAL, Treasurer.

GEO. H. BAILEY, State Veterinary Surgeon.

A quarantine station will be provided, near Morrills Corner, Deering, where all cattle brought into Maine in violation of the above notice will be kept until discharged, at the expense of the owner or owners; and particular attention is called to the full reprint of the law relating to contagious diseases upon the following pages of this circular-letter, which will be rigidly enforced after this date.

Portland, January 1st, 1892.

PLEURO-PNEUMONIA.—Referring to the work of the Bureau of Animal Industry in relation to pleuro-pneumonia, it is quite certain that that disease can be considered as almost eradicated from the United States. If there are yet a few

small districts in New York and New Jersey, where diseased animals are occasionally found, it is in nearly every instance a sporadic and isolated case; there is no danger of any extensive outbreaks. Our colleagues of the force are on the watch, and every new case is rapidly disposed of. The result of this vigilance and energy means a complete extirpation of the malady at a very early date, if, indeed, the work has not been already finished.

The Report of the Secretary of Agriculture, issued October 27, 1891, contains some interesting statements. They read as follows:

ERADICATION OF PLEURO-PNEUMONIA.

At the time of my last report contagious pleuro-pneumonia existed in two districts in the United States, viz.: on Long Island, State of New York, and in the county of Hudson, State of New Jersey. During the present calendar year but four herds have been found infected with this disease on Long Island, the last herd having been discovered and slaughtered on April 30, 1891. Six months have therefore elapsed since the finding of any cases of the disease in this district, and I am satisfied that our efforts there in extirpating contagious pleuro-pneumonia have proved successful.

There still remains a small district in the State of New Jersey from which the infection has not been completely eradicated. The work there, however, is being pressed forward with the greatest possible energy, and I confidently expect that before the end of the present fiscal year I shall be able to announce the complete eradication of this virulent and destructive disease from the United States.

With only one small district infected, with this territory in strict quarantine, and with all herds promptly slaughtered when disease is discovered, there is no longer justification for any restriction whatever by the government of any country against the importation of cattle from this country.

STILL ANOTHER VETERINARY COLLEGE.—The announcement is just out of the opening of another new veterinary college, this time at Des Moines, Iowa. The trustees are O. H. Shoemaker, President; F. W. Loomis, M.D., Secretary, and S. A. Campbell, D.V.S., Treasurer and Registrar.

There are some new features in the faculty, W. C. Conelly, LL.B. being Professor of Veterinary Jurisprudence, and F. W. Loomis, M.D., Professor of Hygiene, Breeding and General Management of Domestic Animals. The application for matriculation is also new, being as follows: Any intending student, desirous to enter the October session, must send his

application to the Dean previous to the opening of the session. On the receipt of this and the forwarding of the matriculation fee of \$5.00, the candidate will receive a ticket which will authorize him to present himself for admission.

The course is of two years, and the fees are for the first year \$120 and for the second year \$135.

All students are required to enroll themselves as members of the Veterinary Medical Association. On fulfilling its requirements, and graduating, students receive the diploma of honorary fellowship of this Association.

While we cannot see the need nor justification for the establishment of a *second* veterinary college in the state of Iowa, we extend our wishes to the new undertaking. S.

AND YET ANOTHER.—The news has reached us indirectly that the University of Nebraska is about to organize and establish a high school of veterinary medicine. Perhaps it is only in embryo at present, but from the interest which the officers of that great institution have shown of late in the progress of comparative medicine, it may be easily inferred that the day is not far distant which will witness the opening of the school. When we reflect upon the subject, however, and in a retrospect of only sixteen years recall the time when veterinary education was represented by just *one school in the entire United States*, and looking about us now we can behold them springing up in all directions, we cannot but feel a little apprehensive concerning the results which may follow such rapid proliferation. Whither are we tending? Where shall we stop? Even with the progress that veterinary science is yearly making, where shall we find the men to teach, unless we expect them to “take turns” and teach one another? Have our veterinary schools already turned out a sufficient number of thoroughly educated alumni to fill the chairs as accomplished scientists, willing to sacrifice what the requirements of the teacher impose? Can we not emphatically say that a great danger threatens veterinary education, veterinary standing and the status of the whole veterinary profession, if the schools of to-day are to look to the graduates of yesterday to occupy the necessary positions in their

boards of faculty—student to-day, professor to-morrow? More schools may be wanted; they are in fact needed, but more important elements are also needed. Are we at present prepared to furnish them? Are they in existence? If so where shall we find them, and in whose personality are they embodied? These are important questions to answer.

TO OUR READERS.—The increased size of the REVIEW for last month, and of the present issue, furnish visible evidence of our desire to fully perform our duty to our readers, and to appreciate practically the kindness of our correspondents. This change is intended for a permanence, and it is our design, moreover, to increase at an early day the number of our pages in order to enlarge our facilities by making room for all the favors of our correspondents. For the present, however, we must again offer the old excuse, lack of space, if some of the communications we have received do not turn up in the present number. They will appear in our next.

ORIGINAL ARTICLES.

PARTURIENT APOPLEXY.

BY DR. J. E. BROWN, V.S., Oskaloosa, Iowa.

(A Paper read before the Iowa State Veterinary Medical Association.)

As my experience with this disease has been a little less satisfactory than with any other; as it is one on which eminent practitioners squarely antagonize each other; as it is one of the many diseases of which the veterinary profession positively knows but little of its true etiology, pathology or successful therapeutics; and as the average man usually writes best on the subject he knows the least about, I thought it well for me, on this occasion, to tackle parturient apoplexy.

I have studied the text books on this subject, and packed my "grip" accordingly, until I thought I was equipped both in knowledge, medical agents and surgical outfit to successfully combat any case of parturient apoplexy, but, somehow on my return from this sort of professional visits, I generally

came back with my store of knowledge and stock of medicines exhausted ; my expectations not exactly realized ; my faith in text-book teachings diminished, and a realization of the fact that even our wise predecessors who could write great volumes of veterinary literature were capable of being mistaken. And now, while I have nothing to offer that I can give proof of being superior to the text-book instructions, I have discovered the necessity of dropping away from these theoretical teachings to a certain degree and making some practical investigations, and I hope from this paper, from the discussions which will follow, and from the united efforts of the profession in making the investigations, that at no distant day, instead of each one of us having a little pet theory of our own, we may stand united, not only upon this, but all other subjects of such vital importance to the profession and general public ; that we may know what parturient apoplexy is, what causes it, and what line of treatment is best calculated to antagonize its fatal effects.

In my experience with the disease I have been particularly impressed with the similarity of symptoms as manifested in parturient apoplexy and many cases of true gastric impaction, and, as you will discover, the purpose of my paper is to show that parturient apoplexy has its origin in gastric derangement.

Just what there is within the system at time of parturition, just before or just after, to predispose the disease or aggravate certain symptoms as are usually most noticeable at that time, but often seen at other times during attacks of acute indigestion, I am not fully prepared to say, but I do believe that if the digestive system could be kept in perfect running order, there would be no such disease known as parturient apoplexy. Among the predisposing causes offered by different authors are "Stimulating food allowed in great abundance," "Access to rich green pastures," "Plethoric condition of the body," and Williams, in *Principles and Practice of Veterinary Medicine*, p. 329 : "It should be remembered that prior to the act of parturition, deep milking cows which are dry or nearly so, rapidly become plethoric ; hence in finding an animal of this kind great care should be taken that the food be not over abundant, too highly nitrogenous or too watery."

Such cases as are here referred to are usually in the very highest state of physical condition, with an appetite craving food of whatever nature, to the full limit of the capacity of the stomach. The organ becomes weakened from its over-taxation, and with the revolution of the system at time of parturition comes the crisis.

However, plethora is not a constant condition. I now call to mind at least three cases which were in low flesh, and of these three cases, two were fatal, and from this it will be seen that non-plethora neither exempts a subject from an attack nor lessens its fatality.

On the other hand, out of a large number of cases most subject to an attack, by virtue of condition (plethora), age, value as milkers, season of year, &c., not only in my own practice, but in that of others with whom I have had correspondence or conversation on the subject, I have as yet failed to hear of a single attack follow where the subject had been given a light cathartic, followed by careful attention to the dietary a few days before and after parturition. Prof. Williams says, "Parturient apoplexy rarely occurs prior to the third period of parturition," but gives two instances succeeding the second calving. I might inform the professor that under favorable conditions it might occur after the first, for I saw a case of that kind. A young Jersey that gave birth to her first calf in the afternoon, during the night got to the meal box, and of its contents ate all she desired, and during the next forenoon developed a typical case of parturient apoplexy.

The sympathy existing between brain and stomach; the affection of one from the disordered condition of the other in all animals and especially in the bovine tribe, is too well known and often observed by all members of our profession to need special comment here, and if we can have all the symptoms of parturient apoplexy in a case of gastric impaction six months after parturition, and it is my experience that we do, it seems to me we may associate the two diseases very closely together. In proof that we do have well developed symptoms of parturient apoplexy six months after parturition, I

will refer to notes on two or three cases which have come under my notice.

The first subject was a grade Durham, six or seven years old, in good flesh and in the sixth month of gestation. I found her lying on the ground; would occasionally make an unsuccessful effort to get up, but had no power in the hind legs; part of the time would lie out full length on the ground and part of the time up in a natural position, with head thrown around to side, and pay little or no attention to her surroundings. The owner told me that when she came in from the pasture in the evening he noticed her stagger from side to side with her hind parts; seemed nervous and gave no milk; that during the night went down and in the morning was as I found her. The abdomen was somewhat distended, and the unmistakable indigestion *grunt* told the story. The next case was a grade Jersey in fair condition for the time of year, (January). Had been giving milk some months and was a good milker. The owner said he had changed the feed a few days before from timothy and clover mixed, to wild hay, of which she seemed at first very fond, but that on this day she had suddenly failed in her milk and would not eat. The bowels were constipated, rumen filled with solids, head elevated and eyes staring. Was on her feet, but was weak and almost fell down when we attempted to drench her; also manifested decided difficulty in swallowing. By morning my patient was down, head thrown to the side, comatose and eyes amaurotic; bowels remained inactive and case died in the evening. A third case, a full blood Jersey, was taken from pasture to our county fair ground for exhibition and put on strictly dry feed; the bowels became inactive, stomach impacted and when I first saw her, was down, full length on the ground, and exhibiting every symptom of parturient apoplexy, although she had been fresh several weeks. Here now are three, and I can recall several more similar cases of parturient apoplexy side-tracked and several months delayed.

Every practitioner will recall many cases where, when treating cattle for indigestion, the stomach was in such an irritable condition that the administration of a dose of salts or

other nauseating medicines was followed by increased uneasiness and manifestation of gastric irritation and nausea, and that these symptoms do *not* follow the administration of the same dose where the stomach is not thus affected; and again that such symptoms generally follow the administration of such medicine in cases of parturient apoplexy, and patients became rapidly worse, and the constant returning of the fluids from the stomach into the throat, while the animal is lying flat, produce fatal strangulation, more often than when taking the medicines in the first place, if they be carefully administered while the head is elevated and the body propped up. No more is the loss of the power of deglutition a symptom of parturient apoplexy than it is a symptom of the impactions, for in either case there is more or less paralysis of the entire alimentary tract.

True, if we ascribe indigestion as the cause of all these cases the question naturally arises why are all the cases occurring at this period accompanied with so much derangement of the nervous system, or why are not these complications a more constant symptom at other times? It must be admitted that at this time, in the history of all animal existence, there is something within the system which predisposes, or aids to a derangement of the nervous system.

The theory of "*nervous shock*," weakening the brain and rendering the organ an easy prey to disease, is certainly upset by the fact that the disease rarely if ever occurs after a prolonged or difficult labor, in which the nervous system would be for a considerable time greatly taxed, but, on the other hand, follows easy and perfectly normal deliveries. Neither can we favor the theory of non-diversion of the blood from the foetus before birth to the mammary glands after birth, "rushing to the brains," for, in many instances to my personal knowledge, there has been quite an abundant flow of milk, which would suddenly cease as the other symptoms made their appearance. Prof. Williams says, "When the symptoms of the malady are not manifested for some time after the birth of the calf, it will generally be found that the secretion of the mammary gland has been in an average or

even abundant quantity." Why then, after the blood has already found its proper distribution and the organs taken on their natural functions, should the process suddenly cease. In the light of a cause of the disease the cessation of milk secretion cannot be accepted, but simply taken as the *result* of a disease. It is well known that in all cases of indigestion the milk secretions are suddenly stopped.

Just what idea is intended to be conveyed by the term "parturient apoplexy" is not clear, at least is indefinite. The term apoplexy is generally used to signify a cerebral apoplexy—a congestion of the brain. Dunglinson defines "apoplexy"—"every effusion of blood which occurs suddenly into the substance of any organ or tissue," but farther speaks of "embolic apoplexy," or "apoplectiform cerebral embolism," which I think generally meets our cases, and describes it as "resulting from the plugging up of the cerebral vessels with emboli—an anæmic condition of the brain thus resulting from insufficient blood supply."

In the cases which I have examined—post-mortem—while there may have been more or less congestion of the meninges, such was not the condition of the brain tissues, but clots, emboli, were invariably present; and I shall here introduce the theory that the blood of the animal at this time is in such a condition as to especially favor the formation of thrombi, which condition, being associated with the gastric affection and sympathetic cerebral complications, combine in one common cause to produce a disease for which, for want of a better name, I must accept the term parturient apoplexy. It is said that in the human female the fibrine, or constituents thereof, is decreased during the first six months of pregnancy, the average being 2.3, while in the last three months it is increased to 4, and as the fibrine results from the metamorphosis of the albumen of the blood and other tissues, and that the blood of the foetus is the great store-house of nutrition, as well as the receptacle of all waste products—the latter being transferred to the blood of the mother through the placenta, and that with the functional development and growth of other organs the placenta becomes of less consequence and a fatty degen-

eration or tissue metamorphosis begins, fitting it for being cast off at time of parturition, it must necessarily be that the blood at this time contains a very great amount of fibrine and effete material, thus predisposing to congestions, thrombi, etc.

Two or three cases, to which I will call your attention, certainly died from the effects of blood clots in the vessels. A full blood Shorthorn had delivered her sixth calf some eighteen hours before the attack. On arrival I found the cow down, unable to get up; in high condition and a strong milker; had given a good flow of milk the evening before. After twenty-four to thirty hours the bowels responded to the action of a cathartic which we had given; the urine was voided naturally and all seemed to be progressing favorably. On the third day the cow got on to her feet, walked about the stable lot after her calf and I discontinued my visits. On the fourth day she was turned into the house lot, picked a little grass, and as the owner afterward informed me, *seemed* to be all right. He left her then for about an hour and on returning found her dead. He said he had made an examination of the internal organs as best he could and found nothing that seemed to him abnormal except the liver, which was enlarged and contained a great quantity of clotted blood, and seemed to be almost in a state of decomposition.

Another case, very similiar, only that she lay in a perfectly comatose condition for about thirty-six hours, then got on to her feet, bowels moved quite naturally, and apparently improved rapidly from twelve to fourteen hours, when an unfavorable change was noticed, and death occurred in less than thirty minutes. No autopsy was made.

The next case was a very large, fat cow that had been highly fed on a nutritious diet with the view of having her in good condition for calving and milking. Gave birth to her fifth or sixth calf in the morning, and symptoms of the disease were noticed at noon. I arrived shortly after and found her unable to get upon her feet; prescribed salts and gamboge, and kept down accompanying tympanitis with spr. ammon. and ether. By the next morning this case got up

and walked to the stable and stood up most of the day ; laid down at night and got up again in the morning ; ate a little mash and drank some water, and except for an inactive condition of the bowels seemed to be doing well until just before noon, when she suddenly sank down and died in a few minutes. These deaths I believe were due to thrombi.

As will be seen, I may define my idea of the pathology and etiology of parturient apoplexy as a cessation of the functions of the digestive organs and a venous or arterial obstruction of the cerebral or other blood vessels by thrombi or embolism, and due to injudicious dietary and the pathological condition of the blood (excess of fibrine) peculiar to this period.

This may not be very elegantly or scientifically "*put*" but comes pretty near to expressing the idea I wish to convey. In studying the symptoms I have quoted largely from our text books, commented from personal observation, and compared them with those of gastric impactions. "The secretion of milk is stopped, the cow hangs its head, ceases to feed, and paddles with its hind feet." And Prof. Williams in his "Practice of Medicine," page 327, says, "By-and-by the breathing becomes hard and rapid ; it sways from side to side ; the hind legs double at the fetlock and at last it falls." "The ears, horns and forehead are now intensely hot, the animal lies in a state of perfect stupor or coma, or dashes itself violently about ; the head is thrown from side to side, and there is danger of the horns being knocked off."

Now I think we will not find "rapid breathing" a symptom of any form of brain disease, but that it is slow and heavy, with deep inspirations, and this is as we see it in the later stages of the disease ; but in the early stages, when the stomach is the principal seat of trouble, the breathing is accelerated, as it is so apt to be in indigestions. Again, in many cases I have sought in vain for any perceptible increase of heat about the head. I do not consider that at all a constant symptom, but that it is misleading in symptomatology and pathology, for I am quite sure that much of the seeming delirium is a result rather of intense abdominal pain than of any brain affection.

“In some cases the nose rests firmly upon the ground, and if the head is lifted up falls back like some lifeless body; at other times the head is brought back to the side, where it remains pressed against the shoulder or neck. There is often a disposition to lie upon the side with the neck and limbs extended, the eyes glassy and the mouth open; tympanitis sets in and the cow will die in a very short time. The cow may remain in this condition for some hours, providing it is made to lie, by packing, in the natural position on the sternum, evincing but few signs of life except the act of breathing, which is generally stertorous. Now and then there is emitted a gurgling sound of gas and fluid regurgitated from the rumen. In some instances the symptoms of delirium are very violent; the animal struggles violently, dashes its head about, bellows, groans and strains violently; very shortly the abdomen becomes tympanitic, and the breathing more labored and difficult. There are eructations of foetid gases from the rumen, and death supervenes. In some instances the bowels may be relaxed in the earlier stages; this is, however, soon succeeded by non-excretion, either of fæces or urine.”

Now I must say if I were called upon to write up the symptomatology of acute indigestion I think I could do but little better than copy the above. So far as I have seen, all authors, in both human and veterinary medical literature, describe the pulse as quick and weak in cerebral apoplexy, whilst in parturient apoplexy it is universally agreed among practitioners that the pulse is slow and weak. As the delirium comes on and the animal struggles about, or with difficulty keeps upon her feet, the pulse is somewhat quickened by the increased exertion, but as she sinks into coma the pulse falls in number of beats and in violence and force, gradually becoming less and less perceptible until death.

There is certainly no other disease upon which the line of treatment has been so diversified. One man treats it with powerful cathartics, another with stimulants, another by venesection and sedatives, and so it goes, but basing our line of treatment upon our theory of cause and effect, we see

two conditions to overcome, namely, the indigestion and abnormal condition of the blood; and to accomplish this we are dependent upon a free action of all the excretory organs.

Sulphate of magnesia, the most commonly prescribed bovine purgative, probably meets the requirements in this disease better than any other medicinal agent we have, for it not only unloads the bowels and overcomes the indigestion, but also, while in the blood, retards coagulation and removes fibrine. The mode of medicinal administration to obtain the best results becomes a matter of consideration, owing to the irritable condition of the stomach in many instances, as has already been referred to, and the nauseating effect of the medicine. I would disapprove of giving a sufficient dose at one time to produce purgation, such doses being calculated to aggravate rather than subdue the urgent symptoms, while doses of six or eight ounces, with full doses of sodii hyposulphite—which also serves a two-fold purpose of counteracting acidity of the stomach or arresting fermentation, and exerting alterative action in the blood—may be given and repeated every one or two hours until four or five doses have been taken. If tympanitis be present I should endeavor to overcome the condition by the use of ammonia, ether, tr. of ginger, or other antacids and stomachics, and if unable to control it in this way the trochar and canula must be used. As there is gradual sinking of all the vital powers I think stimulants are indicated; perhaps moderate doses of belladonna to stimulate the heart's action is as good as we could do.

Great care must be exercised in administering the medicine, lest the animal, whose power of deglutition is likely to be impaired, be not strangled, and when such condition is present all medicines should be given with an injection pump, a short piece of rubber hose, or even a male catheter, if nothing better be at hand, introduced down the throat after the patient is propped up on the sternum. The medicines poured through will pass readily into the stomach. Every precaution must be taken to keep the patient propped up on the sternum, for if allowed to lie out flat the fluids are apt to

be regurgitated into the throat and produce strangulation, or find their way into the trachea and lungs. If an animal be attacked in an open field in hot weather, good shade must be at once provided. The catheter should be frequently used if the urine is not naturally voided. External applications, I think, are of little use other than keeping the body warmly clothed. If consciousness return and the bowels respond to the action of the cathartic, nux vomica may be given with the hyposulphite of sodii, which I think should be persevered in from start to finish of the disease. Immediately upon the return of consciousness there is often an unnatural appetite, and the animal will devour great quantities of almost any kind of food. This must be carefully guarded against, as a fatal relapse would be sure to follow. A very restricted diet of easily digested food is positively requisite to success the first few days.

So far as is possible I would advise educating owners to use preventive treatment on all cases likely to become affected, as preventive treatment is much more satisfactory than curative.

ALCOHOLIC SOLUTION OF Hg. Cl_2 . IN TREATMENT OF FISTULOUS TRACTS.

BY J. McBIRNEY, D.V.M., Charles City, Iowa.

(A Paper read before the Iowa State Veterinary Medical Association.)

In dealing with this subject I may present nothing new; but so far as I am personally concerned, it has proven or seemed to have proven a great boon in the treatment of those most troublesome of ailments affecting the equine race.

Various and numerous are the modes and methods recorded and advocated for treatment of the above, but also as numerous are the futile efforts to effect successful recoveries.

Below, I will quote to you the history of six cases, their treatment and results, which, without question, is the most efficient proof of the virtue of any remedy or treatment.

Should what I offer prove a benefit to any, or aid in the least in the treatment of these troubles, I will feel more than repaid and that my efforts have been not entirely in vain.

CASE 1.—In January, 1891, my attention was called to a well developed poll-evil in a bay mare, fifteen years old, in fair condition, weight about ten hundred pounds, and used for driving purposes.

For several weeks there had been a free discharge from either side. The openings were enlarged with the bistoury and this was all the case called for in the way of operating.

After evacuating the cavity of pus with carbolized water, a solution of alcohol and bichloride (ten grains of the latter to the ounce of the former) was injected and retained in cavity for twenty-four hours by pledgets of absorbent cotton. At the expiration of that time they were removed and the wound dressed antiseptically. This solution was injected twice afterwards, at intervals of from two to three days, the pledgets not being used. The case recovered in six weeks with no other attention than injecting every second and sometimes every third day, one of the following: a weak solution of potassium permanganate, zinc sulphate, or a watery solution of iodine and pot. iodide. Externally the parts were kept well cleansed and lubricated with carb. cosmoline.

I took particular care to guard against flushing or washing out the sore with water, none being employed except that in the solutions and that used on the first day of treatment. No after-complications arose and the animal has been in good condition since.

CASE 2—Fistulous withers in a black mare. The animal was in good health, of medium weight and had been used for farm purposes.

August 1st.—I made free incisions and used nitrate of silver solution in the cavity. The owner took the mare home, a distance of six miles, and for seven weeks treated with white lotion and copper sulphate in solution. The animal was brought to me again and examination proved results unsatisfactory.

At this time, Sept. 26th, the incision had nearly closed, but

still large enough to admit the nozzle of a fair sized syringe. Did not use the knife this time. Injected the alcohol solution the same day, and the two following days hydrogen peroxide. Used the alcohol solution again on the 29th, and followed daily with the hydrogen peroxide. October 7th the case had recovered.

CASE 3—Poll-evil in gray mare, four years old and weighing nearly twelve hundred pounds. Laid open on each side and evacuated of pus, followed by a ten per cent. solution of pepsin injected and retained by means of closing wounds with cotton. The animal being five miles from town, I gave instructions for removal of cotton next day and daily treatment with white lotion.

Five weeks later I saw the patient and found results very unsatisfactory.

I requested that the animal be brought to town, which was done some eight or ten days later, when I again tried the pepsin solution, injecting several times during a period of two weeks with same result; then commenced treating with the bichloride solution. This was injected daily for five days; at the expiration of that time healthy granulations were apparently set up. Hydrogen peroxide was alternated with white lotion daily at first, and later every second, and still later every third day.

During the last two weeks zinc ointment was applied externally.

Seven weeks from the date of using the alcohol solution the patient had successfully recovered.

CASE 4.—Fistulous sore in roan horse, of twelve weeks duration; a result of injury inflicted by some sharp-pointed instrument, which penetrated the tissues inward and downward immediately beneath, or inferior to, the wing of the atlas. The direction of the wound prevented the free exit of pus, and to this fact I ascribed the cause of the formation of the pus-secreting walls composing the fistula.

For two weeks I used hydrogen peroxide with little encouragement; then used alcohol solution four times and followed with the peroxide. The last week zinc sulphate was

substituted for the peroxide. On the twenty-second day the sore was entirely healed.

CASE 5.—Fistulous withers in bay gelding, fifteen years old, weighing about ten hundred pounds, and in a somewhat emaciated condition from a severe attack of distemper. September 24th, laid open on either side, and after clearing of pus (a very large amount being present), injected the ten per cent. solution of pepsin, which was retained for twenty-four hours, then washed out with a one per cent. solution of hydrochloric acid. Treated antiseptically until October 9th, when I began the use of the alcohol solution, not being satisfied with results. This I used five times at varying intervals, following up with hydrogen peroxide and zinc sulphate solution. The case has not yet quite recovered. The progress in this case proved more tardy than any of the others, owing, no doubt, to the condition of the animal, and also to the fact that the case was not under my immediate supervision. On inquiry, I found that the patient, on more than one occasion, received no attention whatever for several days.

CASE 6.—Fistulous sore on left shoulder of roan gelding, located immediately behind posterior border and opposite lower part of middle third of scapula. This occurred as a result of a seton inserted in part about a year previous. With scalpel I enlarged opening and used alcoholic solution on October 23rd and again on 27th. Dressed daily with a weak solution of zinc sulphate. On the eighth day the sore was entirely healed.

Of the above six cases only one failed to respond to a reasonable period of treatment, but this one was debilitated from disease and the animal's systemic condition antagonistic to the success of any treatment. In reality, this patient would not be a proper subject upon which to give a fair test of any therapeutic agent. I believe if the animal had been in the same state of health the others were, that the treatment would have been equally satisfactory.

From close observations during the treatment of these cases, and still wider observations in its more extended use, the following conclusions may justly be drawn: First, that it

is a very active agent and possesses much virtue in destroying the pyogenic membranes or pus-secreting walls; second, that it is also very active in setting up healthy granulations, which is no minor factor in this class of troubles; third, where the use of this agent is exclusively followed up with hydrogen peroxide, not neglecting the external cleansing and lubricating, quicker and better results are obtained.

PNEUMONITIS.

BY F. H. P. EDWARDS, Iowa City, Iowa.

(A paper read before the Iowa State Veterinary Medical Association.)

In defining the disease of the lungs known as pneumonitis, we would say that it was an inflammation of the entire lung substance, either general or local, with the cause still a matter of dispute. This may seem somewhat unsatisfactory, but with existing knowledge of the subject we cannot make our definition otherwise.

Taking up the subject in a scientific order, we would first come to causation.

Causes may be divided into two classes, viz., predisposing and exciting. Under the predisposing may be enumerated—exposure to cold, ill-ventilated stables, debility, dampness, etc. The exciting causes—traumatism, inhalation of noxious vapors, introduction of foreign bodies through the trachea into the lungs, and last, though not least, the direct action of a germ which may, for the sake of convenience, as well as serving to disguise our ignorance, be denominated the pneumococcus.

Now, although we do not know positively that pneumonitis is caused by a germ, still we have some very eminent observers who claim such to be the case, and who claim to have demonstrated the germ spoken of above. Inasmuch as we have no other tenable theory to adhere to, and until it is demonstrated to the contrary, I prefer to believe that pneumonitis is specific in its nature, and that it can only result from the direct action of the specific germ.

The animal is noticed to be drowsy and cold, and refuses to eat, although it drinks freely and frequently. There may be a distinct rigor, and this is followed very frequently by a high fever, with all the characteristics which that term engenders. The animal refuses to lie down, and moves slowly and in an apathetic manner around its stall, occasionally taking a mouthful of food without seeming to relish it. The animal's general appearance is indicative of the feverish condition he is in.

Physical examination shows the temperature ranges from 102° to 106° F., or even higher; pulse full, bounding and running from 60 to 80 per minute; respiration, while not much impaired in the early stage, is vastly increased and in direct ratio to the lung area affected in the later stages. Percussion shows slight dullness in the beginning, then well marked dullness, followed by absolute flatness. Auscultation is the most valuable of all the means at our command. During the first stages we have loss of normal vesicular murmurs; this is due to the congestion of the lungs, and if the disease be not checked we can soon detect the presence of rales. Rales are of several different kinds, and are produced by air passing through and between surfaces which are prone to stick together. We say that if the case be seen early enough we will get sub-crepitant rales; if later on, the rales will be crepitant. As the lungs become pretty well filled up with the inflammatory exudate, the rales disappear altogether. With these symptoms present, we will be safe in saying we have a case of pneumonia on hand.

The prognosis will depend to a great extent upon the time in which we see the animal, and to the surroundings. If we see the case early enough and the surrounding conditions are of a favorable nature, we may say that the prognosis is favorable, at least, comparatively speaking.

The successful management of pneumonitis is a problem that occupies to-day as prominent a position for scientific consideration and solution as it did years ago, notwithstanding our present superior knowledge of its morbid anatomy and the recent advances in general medical skill; and, indeed,

medical thought is so varied and confused as to its proper treatment that it may be justly regarded as chaotic.

This disease is still a reproach to our art, and there is no subject which deserves more earnest study. In company with others, I find that in pneumonitis, after exudation and consolidation have taken place, I am nearly, if not quite, powerless to modify the course of the disease under any treatment now in vogue. This deplorable fact was very forcibly impressed on me some time ago by the loss from heart failure of several patients in quick succession.

I cannot present anything very new in this paper, nor can I express the confidence that the line of treatment I have chosen to consider and elucidate will be successful in a large percentage of the cases that are now regarded as necessarily fatal; but I hope by drawing renewed attention between the pathological condition present and the physiological action of the drugs administered to throw more light upon the general plan of symptomatic treatment that is now adopted by the majority of the profession.

Some authors state that pneumonitis in the first stages can be aborted by large doses of quinine, sufficiently large to cause cinchonism. Whilst this is within the bounds of possibility, I have never yet had the good fortune to cause the abortion of the disease; not from the want of using quinine in large enough doses, but probably from not seeing the case early enough, and experience has taught me that in our patients this mode of treatment is very detrimental to both patient and practitioner.

In the first stages of an uncomplicated case of pneumonitis the indications are clear: 1. Control the circulation and diminish the determination of blood to the lungs. 2. Reduce the temperature if high. 3. Allay pain by both physical and physiological rest. 4. Support the vital powers.

On being called to a case in the first stages, I first find the most suitable place to house my patient; if obtainable, a box stall or double stall with a window facing the south; blanket the animal; hand rub and bandage the extremities, and give a dose of aconite conjoined with oleum lini Oi and bicarb.

sodæ. Aconite lessens the contraction of the heart, chiefly through its influence upon the vagus centre, increases the action of the skin and kidneys and depresses the functional activity of the spinal cord and peripheral nerve endings, effects which serve to recommend it above other circulatory sedatives. If the movements of the heart can be kept at the normal standard, nature may be depended upon to do the rest, so far as the circulation is concerned. Due attention should be paid to the condition of the alimentary tract, which is sometimes seriously disturbed by reflex influences, and although we were taught at school that purgatives in this disease were never tolerated by the bowels, I have never yet seen any bad results follow oleum lini in the dose mentioned; on the contrary, I have seen great benefit derived from its use, not only by securing free evacuation of the bowels, but by switching the blood, so to speak, from the already congested lungs to the bowels. I also leave, to be given three times a day, two-drachm doses of acetanilid to reduce temperature. Order animal to be kept quiet, but not isolated, as animals, like ourselves, in sickness like sympathy and company.

The above measures in the usual run of uncomplicated cases will answer for the first stage; aconite to quiet the circulation; oleum lini to renovate the digestive track; acetanilid to reduce temperature and maintain the action of the aconite. Cold applications to sides in the form of sponging, ice bags, wet cloths, etc., have recently been lauded by several veterinarians in this country. My own practical knowledge of these measures in this disease is limited, but as far as it goes it is confirmatory of their safety and usefulness; my only objections being that quite often the patient objects to it, and it also requires the personal attention of the veterinarian or a trusty assistant—things which are quite often not easily secured; I can readily see the great harm that might arise if this method of treatment were left in the hands of the average stable boy or hired man, such as we see in our every-day practice.

Exposing the surface of the body to cool or cold air is not

without considerable antipyretic effect, and is unattended by any risk, although from prevalent ideas it seems hazardous in the minds of most people.

The axiom that patients with fever do not take cold is one which it is extremely desirable should become popularized.

Popular apprehension on this score often stands in the way of proper ventilation in cases of disease. During the stage of red hepatization an entire change in treatment becomes necessary; this stage is indicated by a weak and rapid pulse, congestion of liver and jaundice, diarrhœa, increased temperature, profuse sweatings, albuminaria, and in severe cases threatening symptoms of a failing circulation.

Now, circulatory depressants are strongly contra-indicated. The treatment of this stage has reference to the promotion of resolution, palliation of symptoms and supporting the powers of the system. Blisters, in my opinion, are not advisable on account of the general disturbance which they are apt to occasion, and their interference with physical examinations of the chest. If pain and soreness continue in this stage, I have had best success with a stimulating liniment, such as spirits camphor, followed up by dry heat, such as stove lids, placed in a sack and fastened on by a surcingle; they will often give immediate relief and will retain heat for a considerable time, the main objection being their weight. In this stage also, an occasional hypnotic is of great benefit, as the poor animal has persistently stood up for probably four or five days or more and has never known sleep. Opium, in my hands, has proved the most sure hypnotic. I have frequently been agreeably surprised on visiting my patient next morning to observe a noticeable diminution of the frequency of the pulse and of the respirations, and a condition of comfort, following full doses of opium. The objection to the use of opium is its action on the secretion of the bowels, as in this stage we quite often have spontaneous diarrhœa. The objection is justly overcome by the great benefit to the patient in other respects. A high temperature in this, as in the first stage, call for antipyretic treatment.

To support the powers of life is the leading general indi-

cation in the second stage. Resolution will be sure to begin and continue if the life of the patient be sufficiently prolonged. At this stage, gentlemen, it is a case of "to be or not to be," and, alas, quite often in my experience it is "not to be"; the disease quite often running on into the suppurative and gangrenous stage, despite my every effort to avert it. Occasionally I am more fortunate, and my supporting treatment consists of tonics, stimulants and nutritious foods. Of tonics I prefer quinine in small doses and gradually increased. I also got aromatic spirits ammonia to stimulate heart and promote liquefaction of the exudate. I give whiskey or alcohol to stimulate liver and sustain vital forces, which act as an active diffusible food, which is quickly taken up by the tissues and appropriated for the purpose of reconstruction and physiological change.

Whenever a question arises in the management of a case, whether alcoholics are advisable or not, it should be borne in mind that to begin earlier than they are required is far preferable to subsequent delay; for, with proper care, they can be suspended without any injury having been done, whereas the time lost by beginning too late cannot be regained.

Alimentation is an essential part of the supporting treatment, and the patient should be encouraged to take nutritious food during the whole course of the disease. Soft nutritious foods are undoubtedly best, but I have often seen patients, especially the cow and horse, refuse everything but corn, and I always encourage them to eat it, as I think the taste and desires of the patient can be trusted in this respect. Where the patient refuses all food, I think great benefits arise from the injection per rectum of small quantities of gruel, milk, etc. As well as the medicinal treatment, the local treatment should never be lost sight of, such as warm foot-baths, enemata of warm water, hand rubbing and bandaging extremities.

In conclusion, I would say that nursing and not dosing is the common-sense treatment of pneumonitis.

PURULENT METRITIS.

BY DR. O. J. LANIGAN, Winona, Ill.

(A Paper read before the Illinois State Veterinary Association.)

The case which I have to report to you is one that I have encountered in my practice.

In April, 1890, I was called to the country to deliver a mare of a foal. On my arrival at the farm I found, on inquiry, that the owner of the mare and a farm hand had been at work on the mare some four hours, they evidently wishing to practice some themselves before calling any assistance. On examination, I found the foal in the proper position, excepting left elbow, which was retaining it. On pressing the foal back and drawing on limb it was an easy matter for her to foal, which she did with a little assistance, the foal being dead. On account of the rough usage she had received the vagina was very much swollen and painful, but otherwise the mare was in good condition. After using an antiseptic wash and giving the mare proper attention, I suggested to the owner that I should call the following day, as the mare would need medical care, but was informed that he could care for her himself.

I heard nothing of the mare until August, when I was told she was not doing well, and that she was discharging per vagina.

In February, 1891, the mare was brought to my hospital by her owner. He informed me that, after having her foal, she had always discharged more or less, and he had worked her during spring work, but as she was getting worse he brought her to me. She presented a very poor appearance, terribly emaciated, eye dull, temperature 102° F, pulse 55, did not care to eat, abdomen enormously distended, and discharging per vaginum a dark colored, offensive smelling fluid.

On examination per vaginum, about one inch anterior to meatus urinarius I found the walls of vagina adherent; and that anterior to adhesion the vagina was filled with pus; also,

that there was a sinus through the adhesion, although I was unable to find it.

I at once decided to try and break down adhesion. After due preparation with antiseptics, I took an 8-inch seton needle, and passing right hand into vagina, with left hand passed needle, directing its course with right, and as carefully as possible broke through the adhesion, which was about half inch in length. On withdrawing the needle, pus followed quickly; forcing index finger into opening made with the needle, I enlarged the opening so that I passed the whole hand, when, on withdrawing my hand, an enormous quantity of pus followed. The mare began to strain violently, and with every strain forced pus from behind her, pus of a darkish cast and terribly offensive, driving my assistant and others out of the barn.

As soon as the mare stopped straining, I again passed my hand into vagina; the broken adhesions left a jagged surface, which I dressed down with curved scissors. The os uteri and uterus I found more relaxed than any case I have seen immediately after foaling. The mare now began to show signs of pain. I at once prepared an antiseptic and thoroughly irrigated uterus, dressed the wound that I had made by placing a pledget of antiseptic cotton in the vagina, gave the mare a stimulant, clothed her warmly, and turned her into a box stall, where she at once lay down, and I then had hot rugs applied to her loins.

The next morning she could not rise, and refused to eat; temperature 104° F.; pulse 60. Gave stimulant of tr. mur. iron, quinine sulph., with antiseptic washing of uterus and dressing to wound; also hot rugs continuously to loins. From second to sixth day no material change, only that she would occasionally eat a little with coaxing; nursed her as carefully as possible, and placed a careful man with her night and day.

On the sixth day appeared much better, and with a little assistance got on her feet, but very weak, and could with difficulty move her hind limbs. She now, for the first time, ate a mash and some hay and appeared bright. After a

thorough hand rubbing to limbs she moved around stall, though with difficulty. I now discontinued the use of all medicines excepting fl. ex. hydrastis, and gave a soft diet. From this time on her recovery was rapid, and in one month from time of operation she left my hospital cured. She is now in fine condition and again in foal.

INFLUENZA.

BY MATTHEW WILSON, M.M.C.V.S., Mendota, Ills.

(A Paper read before the Illinois State Veterinary Association.)

Influenza is a disease that has long been known to medical science, both human and veterinary. Its history can be traced back with certainty only to the beginning of the sixteenth century, although as far back as the year 1300 we have accounts of an epidemic among the horses of Italy that seems to-day to be recognized as influenza.

With the beginning of the sixteenth century we have accounts of epidemics the wide distribution of which have been reached by no other acute infectious diseases.

Up to the present time a great number of epidemics have been described, which generally extended over whole countries and frequently over several quarters of the globe.

They returned at indefinite periods and affected every season and latitude, advancing as a rule in a great wave.

In some cases they appeared to be preceded by sporadic cases, but more commonly a large number of the animals would be affected simultaneously, the disease spreading with great rapidity.

Among the numerous outbreaks the following are recorded:

In 1648 an epizootic of this disease appeared in Germany and from there rapidly spread to other parts of Europe, and in 1711 it attacked the horses of the European armies, causing great losses.

In 1732 the disease appeared in London and later on in the same century in Scotland.

In 1766 we have the first attacks on the horses of America,

and not making its appearance here in anything like a virulent form until we have the extensive outbreaks of 1870-71, when it spread over the entire country.

It is to-day an almost permanent disease among the horses of our large cities, where bad ventilation and want of sanitary arrangements about the great majority of stables seem to keep the disease alive and perhaps predispose fresh animals to it.

Influenza is a specific febrile disease, dependent upon a specific blood poison and prevailing as a epizootic.

It is essentially characterized by a catarrh of the respiratory and generally also of the digestive organs, by great and rapidly developed weakness, pains in the head and limbs, as well as by serious nervous symptoms and fever of greater or less intensity.

It is confounded generally with simple catarrh, but is distinguished by its wide diffusion, its rapid spread and the number of cases in the regions in which it occurs.

We cannot lay its cause to atmospheric influences, as we have it occurring at all times of the year, during different climatic changes, and in countries whose atmospheric surroundings are totally different.

We have it occurring at seasons of the year when climatic changes are such as do not produce catarrh, and aside from this we have those lesions of function, peculiar to influenza, that can in no way be connected with a simple catarrh.

When we think of the numerous opportunities presented by this disease for investigation, and to what extent literature has been written upon it, we are surprised at what few facts have been gathered together concerning its cause and origin.

A great many theories have been advanced as to the etiology of influenza, such as that of atmospheric influence; others give it a specific origin, but have never been able to isolate and demonstrate its specific cause; while on the other hand there are those who claim it has a spontaneity of origin, due to want of sanitation. This last is, I think, the weakest of all, as we have it occurring when sanitary arrangements are the best, as well as where they are almost entirely wanting.

The theory of its specific origin is, I think, conceded by the majority to be the correct one, although we have as yet been unable to produce conclusive evidence.

It is due to a *living miasm*, capable of being carried onward by the air but having an independent existence of its own, and which would find in certain places conditions more favorable for its development than in others.

Take, for example, the last outbreak of influenza in the human family, which seemed to have been developed in Russia and spread in the direction of human intercourse and the prevailing winds from the east to the west.

This living miasm is capable of transmission through the air, of being carried by human beings or, in fact, by any of the known modes of infection.

Influenza has been described as the sum of a series of catarrhal manifestations, which have developed under common epidemic influences, and the intimate association of the various local affections allows us to give them a common specific origin.

Many acute local affections, such as acute catarrh, laryngitis, etc., present very much the same symptoms locally, as in this disease, but there is wanting the sudden and general seizure, the severe nervous depression, and the extent to which the mucous membranes are involved. All these seem in favor of a general cause which has a specific effect upon the whole body.

These symptoms are much more severe than in the local affections, while they remind us more of analagous symptoms in other acute infectious diseases, and for these reasons I think we are justified in classing it under the same group.

There is a close analogy between the first symptoms of influenza and measles in the human subject.

Before the eruption occurs on the skin in measles there is found to be a catarrhal affection of the mucus membranes lining the air passages and also of the conjunctiva. This catarrh is so constant a manifestation that it has been considered a pathognomic symptom, especially in those cases where the eruption cannot be seen. Here it is, as in influenza, one of the earliest and most constant symptoms.

In canine distemper, we have another disease whose early symptoms coincide with those of influenza. Here we have the disease ushered in with chills, a dry irritated condition of the mucous membranes, where the discharge soon becomes more copious, great debility, and in some cases an extension of the inflammation along the respiratory tract to the lungs and pleura.

In these diseases we have two that are recognized as being due to a specific organism, presenting characteristic symptoms, that almost coincide with those of influenza, and what more probable to assume from this that in influenza we also have a disease whose ravages are due to a similar cause.

The pathological changes in the body are due to the absorption of the morbid material by the blood. The alteration occurs in the blood where we have a rapid destruction of the red corpuscles.

The absorption by the tissues of these disintegrated corpuscles give them a yellowish tint and a congested appearance. The first sign of this is seen in the early discoloration of the mucous membranes. Along with this we always have more or less congestion of the various organs of the body.

Other pathological changes are due to complications, as if the lungs are affected, we have the changes due to pneumonia or pleurisy. If enteritis or congestion of the liver is the complication, we have the changes taking place in them.

The development of the symptoms of this disease, after a period of incubation varying from four to three days, may result in a very mild attack or they may be very intense.

In a mild attack we have the disease running its course as a specific fever, with only the alterations in the blood, but if the attack is severe, we may have it complicated with inflammatory diseases of the various organs, aggravated by the already weakened state of the body and the alterations in the blood which have a tendency to favor a fatal termination of these complications.

The first symptoms are those of great indisposition, rapidly developing fever, which may become intense, chills of the body, staring coat, loss of appetite and a dry, irritated condi-

tion of the mucous membranes. The pulse becomes increased in number, varying from 60 to 80 and even 100; it may be at first moderate in volume but becomes weak. The discharge from the mucous membranes at first is thin and acrid, but as the disease advances it becomes more copious and thicker.

In the condition that is known as pink eye we have the discolored pink condition of the mucous membranes lining the nasal and buccal cavities and the eyelids, tumefaction of the limbs and eyelids, great stupor, and the animal very weak. The fever may run up as high as 105° F. or 106° F., and generally lasts from three to four days.

At the end of this time, if the disease runs a favorable course, the fever begins to abate, the appetite returns, the various organs take on their natural functions, the pulse falls in number and becomes stronger, and we have the animal left convalescent in a weakened condition.

Death in these cases may be the result of an excessive fever with failure of the heart's action, asphyxia from a rapid congestion of the lungs, or from the poisonous effect of the morbid matter due to disintegration of the blood corpuscles.

The complications, as we have before mentioned, are generally of an inflammatory nature. As a result of the primary lesion we have a congestion of the various tissues.

This, along with a distended state of the blood vessels, a weak heart action and an improper aeration of the blood, is very prone to be followed by an inflammation, due to the slightest irritating cause.

During some outbreaks we have the majority of cases complicated with an inflammatory condition of the lungs; in others we have the complications arising in the bowels or liver. Why this should be we cannot determine, unless it is that local climatic changes or atmospheric influences may be the exciting cause of these local lesions, the animal becoming more predisposed due to the pre-existing disease.

To enumerate the systems of the various complications would be to go into those of pneumonia, pleurisy, enteritis, etc., which I do not think would throw any light on our sub-

ject, and which could only be thoroughly discussed under their respective heads.

Treatment must of course depend upon the symptoms exhibited by each particular case, but there are some measures that will apply equally to all.

Great care must be taken to keep the animal free from exposure to draughts, and at the same time have ventilation sufficient to provide him with plenty of fresh air.

He should be well covered with sufficient blankets to keep up external heat, the legs hand-rubbed and bandaged and his surroundings kept clean.

Antipyretics are indicated from the first; of these we have a great variety, and selection must depend upon the practitioner.

I have found a combination of digitalis and nitrate of potash a good remedy, giving it twice a day.

In this we have not only a febrifuge action, but we strengthen the heart, lower its pulsations and have a diuretic effect.

If the fever remains high, two or three doses of acetanilid combined with digitalis sometimes has a good effect.

If the attack is mild, generally all that is needed is good nursing and salines dissolved in the drinking water.

If there is a tendency to constipation, a powder of sulphur and nitrate of potash each day will generally relieve it, along with warm bran drinks or linseed tea.

The treatment in complications must of course depend upon the accompanying disease, remembering at the same time the weakened state of the animal and let our treatment be such as will keep up our patient's strength.

PARTURIENT APOPLEXY IN COWS.

BY DR. D. McINTOSH, Champaign, Ills.

(A Paper read before the Illinois State Veterinary Medical Association.)

When I first commenced to practice, I followed the rules laid down on the subject, viz.: bleeding, giving large doses of physic, injections, hot cloths to the back and loins, and ice to

the head, etc., and under this method of treatment very few of my patients recovered.

This state of affairs troubled me very much, and I determined to investigate and find out if we were right as to the nature of this very fatal disease. I read all I could find on the subject. The authors differed so much as to the nature and cause of the disease, that I found very little benefit in this line. My next effort was to make post-mortem examinations of all the cases that died from this disease. The first post-mortem I made surprised me very much, as I found none of the characteristics of congestion or inflammation present. At the next case which presented itself for post-mortem I had the assistance of a medical man well versed in pathology. We made a very careful examination and found no appearance of congestion or inflammation. I made several more post-mortems of cows which died from this disease, with the same result. This led me to think we must be mistaken as to the true nature of this disease, and if so, our treatment must be wrong.

It is a well-established fact that coma or delirium can occur without congestion or inflammation of the brain. An over-distended stomach or deranged state of the nervous system will cause it. Another fact to be considered is, that the symptoms of inflammation or congestion of the brain are very different from those of parturient apoplexy, especially in the early stages of the disease. These facts led me to believe that the disease must be of a nervous character and not congestive. Some writers of note think it is caused from derangement of the sympathetic nerve, and through its action on the blood vessels, caused congestion of the brain. This last part is, I think, where the mistake has been made. The sympathetic nerve controls all hollow viscera, and has a special action on the uterus, and through its connection with the lumbar nerves, deranges the muscles of the loins and posterior extremities first, gradually proceeding forward until the brain becomes affected, producing coma or delirium.

Taking this into consideration, I changed the treatment to strong stimulants, and, to my satisfaction, the patient recovered. I have adopted this form of treatment ever since,

and I never lose a case of this so-called fatal disease. I consider it useless to torment the animal by pouring down large doses of physic. The sympathetic nerve controls secretion and excretion, and on that account the physic will not take effect until the sympathetic nerve is performing its function; and this can only be done by stimulants. The following is the treatment I have adopted :

R Spt. ether nit., ℥ xx
spt. ammon. aromatic, ℥ x
M.

Give three ounces at a dose, every half hour, in one pint of cold water, until five doses have been given; then, every hour until the remainder has been administered.

Also apply two pounds of mustard, made into a poultice with boiling water, along each side of the spinal column, and cover with blankets. Keep the animal on its sternum by means of bundles of straw. She seems to rest easier in this position. Some one should be in close attendance until she is better. Usually in from eight to ten hours the animal will be able to rise. If the animal has not recovered at the end of that time, it will be necessary to give her ten ounces more of the same kind of medicine. I have had to do this in a few cases.

In my opinion, the best preventive in this disease is to keep the cow in a good, firm, healthy state. This can be done by giving the animal good solid food and not too much of it. In the spring, when the weather is getting hot and the grass long and succulent, keep the cow off such pastures and put her in a place where she cannot get much grass, and feed with dry, solid food, as hay, oats or corn. Soft, sloppy diet is not good. If the animal is fat, soft and flabby, it would be well to give it one and one-half pounds of epsom salts about ten days before calving. It is not wise to give it a few hours before parturition, as it weakens the animal. This treatment I have advised for several years, I think with beneficial results.

THE USE OF VEGETABLE TAR IN VETERINARY PRACTICE.

BY DR. A. ROUIF, V.S., Deputy State Veterinarian, St. Louis, Mo.

There is perhaps not a single medical agent so universally employed for local treatment in animal diseases as vegetable tar, and probably there is not one used with so little judgment. It is prescribed right and left, crude and in the forms of ointment with wax, turpentine, etc., according to the oldest empiric formulas of old time farmers, who used tar on all occasions, particularly in diseases of the feet. We all know of the numerous formulas of the French and English in which beeswax, mutton tallow and turpentine enter in various quantities and are mixed with tar more or less imperfectly.

Now tar has real therapeutic value. It is undoubtedly an agent possessed of healing properties, particularly in skin diseases, and it is recognized also internally for lung affections. Of the internal use of the drug I will not speak here. Wherein does its curative value lie in external application? In my judgment, it is because vegetable tar is an ingredient in contact with which microbes will not grow. It keeps a wound, a diseased skin free from the irritation of growing germs, which constitute serious complications of all exposed diseased surfaces, whether primarily due themselves to germs or not. Beneath the application of tar, in a *proper strength* and a *proper preparation*, the diseased parts granulate by the efforts of nature and heal more or less rapidly, uninterrupted by the vegetation of various bacteria and their toxic, irritative products.

But tar is itself an irritant, and in its natural state is unfit for use, and if injudiciously employed, retards the repairs of nature instead of aiding in their accomplishment. Pure vegetable tar, for instance, aside of its being unsuitable because of its stickiness, is decidedly irritant and unfit for a diseased surface of any kind. If employed too strong even in ointment form the same objection in a degree arises. If employed in combination with lard, cosmoline, etc., it usually presents a very objectionable appearance and besides it is very often

granular and when rubbed on a surface the heat melts the basis and the irritant granules of the tar injure instead of having a beneficial influence.

What then is the best method to use tar locally? In my judgment it is in the comparatively new combination known as tarro-petrolene (or other equally well blended tar ointments) which at first appeared on the market with a trade mark attachment and in a black, uninviting appearance, but which in the last year has been greatly improved, has discarded its trade mark, appeared in a clean amber color, free from any granules, and whose composition is open to the medical and veterinary professions in the published "ads." So, it is now, in my judgment, a legitimate combination in which tar is admirably combined with a petroleum jelly, which in itself is not a meagre curative ingredient in the treatment of skin affections and wounds. At any rate, I use tarro-petrolene largely pure, or with an addition of other drugs, with remarkable success in almost every kind of skin eruptions and even in local acute inflammations such as lymphangitis, mammitis in cows, in which it has given me great satisfaction.

In this ointment, tar seems to be dissolved some way and not simply mixed with the excipient, and the beauty of it is, that it is always ready and one has not to wait a whole day for a pound of bad ointment, if he prescribes it at a drug store, or it saves the practitioner mixing and boiling a whole day himself to bring forth in the end only a poor mixture at best.

Tarro-petrolene, it is published, contains a little over two drams of tar to the ounce and, I think, a trace of boracic acid. Any other proper and compatible chemical may be added to it in a particular case where it is desirable. For instance, I have added carbolic acid, aristol, boracic acid, iodoform and particularly naphthol.

In mange and other skin affections (of a parasitic or non-parasitic character) in dogs I have used this successfully with and without the addition of sulphur, creosote, etc. Of course I have not banished the internal use of arsenic and iodide of potassium, but where these and all forms of ointment failed

heretofore I often succeed now by the means here indicated. For instance, I have seen the most rebellious, inveterate cases of scratches in horses yield readily to an internal treatment of arsenic and external application of tarro-petrolene pure where I had uselessly given the same treatment internally for months, and used locally everything that the veterinary pharmacopias in the English and French languages preconized.

Nor is this all: I found tarro-petrolene superior to any tar or other ointment I have yet tried in dryness of the hoof, frog and contraction. It also keeps the flies away. I now use pounds of this preparation weekly with most encouraging success.

EXTRACTS FROM GERMAN JOURNALS.

TRANSLATED BY RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

CEREBRAL DISEASE IN EQUIDÆ.

Louis reports the following: From October 1, 1889, to January, 1890, six horses belonging to a vine planter became sick under symptoms of vertigo and spasms; two of those died and four were destroyed. Upon post-mortem, the membranes surrounding the cerebellum, medulla oblongata and the spinal cord were found thickened. In the cerebral ventricles and spinal canal a bloody exudate to the amount of five ounces was secured; otherwise no alterations.

As soon as the last case became sick, Dr. L. was summoned; the section in this case was different. Lesions in the abdomen awakened suspicions of anthrax; these were confirmed by microscopic examination.

Another animal afflicted from December 23 to February 17 manifested symptoms similar to the others at various intervals. A very careful examination of the blood of this animal, however, gave negative results.

Eder was unable to obtain satisfactory results by injecting pilocarpinum hydrochloricum in sub-acute cerebritis. We saw six out of twenty-three recover. The treatment consisted of two injections of 0.2 grams antipyrinum with 0.05 physos-

tigminum; cold applications locally and bran mash. R. recommends the sod. salicylate in cumulative doses, together with acidum hydrochloricum in the drinking water. J. praises antifebrine in doses of 3 v—vii.—*Woch. f. T. u. V.*

RINDERPEST IN EAST AFRICA.

Schynse writes that rinderpest is epizootic in Uruma, and that it has infected all herds, daily sweeping away hundreds. All the animals belonging to his society died, except one which had been given doses of quinine. Of five patients subjected to this treatment one died and the remainder improved; after a time they received no quinine and three of these succumbed. Unfortunately, consideration for the public health made it imperative that the experiments should be stopped.

The disease continued two and three days in those animals not receiving quinine; foam escaping at the nose and commissures of the mouth. On section the gall bladder was filled and tense. Schynse advises European veterinarians to experiment with quinine in this direction, but he is not aware, evidently, that the contagion as met in Africa is totally different. It assumes in that country a malarial aspect peculiar to the hygienic influences of this section of the globe. In short, being malarial it is amenable to quinine.—*Berliner Wochenschrift.*

MEAT INSPECTION.

During the period embraced between the years 1886 and 1889 there have been 24,030 men engaged in meat inspection in Prussia.

In the village of Gersdorf thirty persons have fallen sick of trichinæ. From the subsequent investigation it has been revealed that some eight days previous the afflicted had eaten smoked sausage bought from a local butcher. The meat used in the manufacture of the bologna had been procured from a *meat inspector* of a neighboring town, and was stamped by him as being *free of trichinæ*.—*Berliner Wochsch.*

APPLICATION OF CREOLINE IN CANINES.

Guinard treated dogs affected with *acarus* by energetic frictions of a five per cent. creoline salve applied twice daily. One patient was cured through the beneficial effects after submitting seventeen days. Another dog, whose body the disease had entirely usurped, succumbed under symptoms referable to creoline poisoning. This animal was rubbed alternately upon the anterior and posterior portion of the body, and was bathed in a one per cent. creoline solution once daily.—*Thier. Woch.*

MAY GLANDERS BE TRANSMITTED THROUGH THE SKIN.

Babes observed a few cases of cutaneous glanders in man without being able to discover the slightest wound or abrasion; he concluded therefrom that the bacillus, after coming in contact with the skin, is by some cause enabled to enter the sebaceous follicles. In this locality he supposes the growth and extension of the pathogenic organism to take place. This it does by insinuating itself between the cells lining the gland and entering the lymph vessels. To prove this supposition, he composes a salve of pure culture of the malleus bacillas, and rubbed the same upon a guinea pig. The animal immediately thereafter evidenced symptoms of glanders. The trials by Nocard, which are given below, differ diametrically from those of Babes.

Nocard rubbed salve, composed of living bacilli, upon the unabraded skin covering the forehead of three mules, and upon the inner side of the thigh in five guinea pigs. Of the eight subjects only two guinea pigs died. From this, Nocard considers himself justified in stating that infection through the unabraded skin is impossible. He attributes the death of the pigs to be due to inoculation through some abrasion.—*Thier. Woch.*

PRESERVATION OF PLEURO-PNEUMONIA BY LOW TEMPERATURES.

L. and P. have just completed a number of experiments with various products of pleuro-pneumonia, whose object was

to determine the effect of cold upon the virus of this epizootic.

They record that a "P.P." lung which had been frozen, retained its virulence over one year. The lymph obtained from this lung possessed the same activity as that derived from a recently slaughtered animal suffering with the disease. The contents of the bronchiæ of the frozen lung, when inoculated in healthy animals, produced positive results after the lapse of several months.

Upon this ground the observers warmly recommend this method of freezing as an acceptable way of conserving pure and diluted virus of contagious diseases, and also as a means of preserving fresh anatomical preparations intended for demonstration.—*Reportoire de pol.*, 1891.

CROUPOUS VAGINITIS AND METRITIS.

In a stable kept scrupulously clean, one or more cows at various times became sick with septic metritis. This always ended unfortunately in spite of immediate veterinary assistance. At the end of the present year we were again called in to inspect a cow in severe labor, and which at every pain threatened to prolapse the uterus. Examination of the uterus, which in the last parturition had protruded half its length, revealed it to be in a normal position. With the exception of a few small wounds, which might have been caused by obstetrical instruments, no injury was detectible. Chloral, ice, etc., operated in no degree to diminish the straining. The uterus was irrigated with a 1.5 per cent. solution of creoline in quantities of ten liters three times daily. The expulsive efforts and temperature of 104° F continued. On the eleventh day we removed a complete counterpart of the uterine cavity, composed of a tough, schirroid deposit; shortly after the morbid symptoms disappeared.—*Woch. f. Th. u. Vh.* 33.

AZOTURIA.

As early as 1874 Thomas communicated that azoturia was more prevalent in years yielding a good wine crop, as in

these years especially, potatoes, beets, etc., contained excessive percents. of saccharine matter. He attributes the disease to the superfluous sugar. In mild cases he prescribes hot wine; in more serious ones he gives, with good results, subcutaneous injections of pilocarpine, followed in the second day by intratracheal injections of pot. iodide $\frac{3}{4}$ iss. three times a day. "S" has observed azoturia in two oxen; the symptoms not varying in any manner from those of the horse. The attack lasted twenty-four hours and terminated in recovery. The oxen were taken from an overwarm stall early in the morning and yoked to the plow.—*Woch. fur T. u. V.*

A NEW HORSE FOOD.

Scheur-Kestner has already succeeded in producing a novel bread from chopped meat, sour dough and meal; this food is practically imperishable, and of fine texture. Chardin used the blood from cattle instead of meat, and has made several varieties of bread, which is free from all specific tastes. This was fed to horses, sheep and rabbits with uniformly good results. Chardin considers this bread of great value as a food for horses in war, and, if need be, for men also.—*Annales de Med.*

BIBLIOGRAPHY.

AGE OF THE DOMESTIC ANIMALS. BY PROFESSOR R. S. HUIDEKOPER, M.D. (F. A. Davis, Philadelphia.)

This handsome octavo is from the pen of our friend, the well-known editor of the *Journal of Comparative Medicine and Veterinary Archives*. To many readers of the *Journal*, the "Age of the Domestic Animals" will seem to be little more than a reprint, in book form, of a long series of articles which have appeared in the former publication during the last two years, but a careful perusal of the work will satisfy the reader that it is much more than this, and that many corrections and important additions to the serial matter have made the new "Age" our most valuable guide in this important branch of

veterinary practice and science. The literary execution of the book is very satisfactory, the text is profusely illustrated, and the student will find abundant means in the cuts for familiarizing himself with the various aspects presented by the incisive arches during the different stages of life. The phenomena of the characteristic evolution of the teeth of all our domestic animals is fully considered, and the illustrations, both original and borrowed, are executed in a manner adequate to the importance of the subject. Illustrations do not always illustrate; these do. The book is completed by an appendix upon human dentition, which thus renders it a thorough and complete treatise upon dental development.

This is, we believe, the first work of importance with which the profession has been favored from the pen of Professor Huidekoper, and we hope that its reception by veterinarians, breeders and by lovers of horse-flesh will be such as to encourage its author to hasten the completion of other works, which, according to rumor, he has in preparation.

It is by the multiplication of books of this character that we may hope, within no long period, to possess an original American veterinary literature which may, without discredit, fraternize with that of old Europe.

It rests largely upon our younger men to accomplish this. When will the ambitious and competent among them make themselves known?

THE VETERINARIAN'S CALL BOOK. By PROFESSOR ROSCOE BELL, D.V. S. (Sabiston & Murray, New York City.)

It should be gratifying to veterinarians to know that at last one amongst them has undertaken to furnish his brother practitioners with one of those compendious conveniences which, when we at length possess it, causes us to wonder how we ever did without it. They have been common for years back in almost every country, excepting our own, and we hope, therefore, that if for no other reason, this maiden attempt of Professor Bell will receive a liberal and justly deserved welcome at the hands of veterinarians throughout the country. It contains a large amount of information relat-

ing to veterinary matters, not only in our own country, but amongst the practitioners of Europe as well. A perpetual yearly register is intended to relieve busy practitioners from the annoyance of daily book-keeping. It gives also an *Annual Record*, containing lists of veterinary colleges, societies and associations which, not at present complete, will no doubt be corrected and perfected in future editions.

The "Veterinarian's Call Book" is a successful effort to supply a want of the profession, and we hereby tender our sincere compliments to the author.

PRACTICAL GUIDE TO MEAT INSPECTION. BY PROFESSOR THOMAS WALLEY, Principal of the Edinburgh Veterinary College. (Young J. Pentland, Edinburgh.)

With this title Professor Walley, one of the best qualified authorities on this subject in Great Britain, issues a second edition of his book on meat inspection, and it will be accepted as one of the most important of recent additions to English veterinary literature. In the two hundred pages which compose this excellent work, Professor Walley describes the method which should be pursued by the veterinarian in the performance of the duties pertaining to this special branch of sanitary medicine, and initiates him into the details necessary to follow in his investigations of the condition of food meats, and the causes and appearances by which it is rendered safe or otherwise for human consumption; illustrating his text by nearly fifty truthful plates which exhibit the facts in aspects most natural and instructive. Professor Walley is widely and favorable known to the English reading sanitarian through his work on bovine scourges and his numerous published papers on the subject of meat inspection, as well as by his participation in the discussions on sanitary science in the British veterinary societies. His standing and reputation, thus acquired, are sufficient vouchers of his ability to do justice to this, probably not yet properly cultivated department of our profession. "The Practical Guide to Meat Inspection" will, no doubt, prove to be a very serviceable book to the English veterinarian and for us in America where meat inspection has just received,

at the hands of the Department of Agriculture and of the Bureau of Animal Industry, the national recognition and authorization to which it is entitled. The book is also destined to be of eminent value, and an authority which the American veterinarian and sanitarian cannot afford to ignore.

THE SUPREME PASSIONS OF MAN. BY DR. PAUL PAQUIN, M.D., V.M.
(Little Blue Book Co., Battle Creek.)

A well-known writer in veterinary and scientific subjects has in this little addition to the Little Blue Book series of publications brought forth a semi-scientific and semi-religious treatise on "The Supreme Passions of Man," which he dedicates to his mother and to his beloved wife. This fact alone is sufficient to indicate the character, the quality and the value of the contents which make up the pages of the book. With the sentiments thus implied, and dealing with the most profound and sacred of human motives and sympathies, and inspired by the purest and gentlest of the better impulses of our nature in the filial and the conjugal instincts, what better theme, or more attractive, could an author select with which to approach an appreciative and expectant class of readers, such as are sure to be interested in a work so entitled? "Supreme Passions" is full of pertinent suggestions and profitable thought relating to the subject of which it treats, with wise conclusions and valuable suggestions, and forms a magazine of good counsel and items of excellent advice which no man can fail to find profitable if well heeded.

EXTERIOR OF THE HORSE.—BY ARMAND GOUBAUX AND GUSTAVE BARRIER, translated by Prof. J. J. Harger, V.M.D., Veterinary Department of the University of Philadelphia. (Lippincott Co., Philadelphia).

Since the publication of Percivall's work on the External Forms of the Horse, published in 1850, there has been nothing in English written on this important subject. This translation of the standard European work of Goubaux and Barrier, therefore, fills up an important vacancy in our veterinary literature. The translation of Prof. Harger has, therefore, come just in time, and his selections of the French book must

evidently lead to the establishment of a special department in our veterinary schools. Our students will then have an opportunity to become educated in one of the preliminary branches of veterinary knowledge, and acquainted with an essential subject pertaining to a thorough veterinary training. Nor will it be the veterinary student alone who will profit by the study of the book, but all who are interested in obtaining the information it contains.

“Exterior of the Horse” is divided into eight sections, these being subdivided into chapters. In the first section the reader is made acquainted with some rules of physics relating to the center of gravity, the lever and muscular mechanism, and the inclined plane. The second section treats of the various parts of the body by regions. The third relates to the proportions, viz., “the agreement and correlation as applied to the different parts of one whole.” In the fourth, the important subject of locomotion is treated *in extenso*. The fifth makes us acquainted with important points pertaining to the age of horses, the teeth being carefully considered, both from a general point of view, and with reference to their characteristics as affecting the determination of the age. In the sixth section the reader is initiated into the important subject of the identification of the animal by the examination of the general and special features that distinguish individual animals from one another. In the two last the aptitudes for work, and the consideration of the various vices of the animal are treated at length, the last section being appropriated to concise counsels in respecting the selection of a horse.

The numerous and excellent illustrations, numbering not less than eight hundred and fifty-four, are neat and clear. The literary execution is good, and makes easy reading. The publisher's work is far above almost anything published in the average of veterinary works. Altogether “Exterior of the Horse” is a superior work, which does great credit to the authors and translator, and we have no doubt will meet with general and deserved acceptance by veterinarians and others.

COMPARATIVE ANATOMY OF THE DOMESTIC ANIMALS. BY A. CHAUVEAU. Translated by George Fleming.

In reference to our notice in December issue of this excellent work, we have received the following:

DEAR MR. EDITOR: In the notice you kindly give of my translation of Chauveau's Comparative Anatomy of Domesticated Animals in your REVIEW for the present month, complaint is made that the new edition is based on the third French edition. Please allow me to state that this is not the case. In the preface you will find it mentioned that the fourth edition, issued last year, was the one referred to. I have not seen the third edition. Hoping you will allow this correction to appear in the AMERICAN VETERINARY REVIEW,

I am yours sincerely,

GEORGE FLEMING.

In answer to this we may say that we have found so little difference in the text in both the third and fourth editions that, taking into consideration the absence of the new colored plates in the second English, we concluded that the translation was made from the third French. We are pleased to correct our error.

NEW VETERINARY GRADUATES.

ONTARIO VETERINARY COLLEGE.

"The results of the December examinations in connection with the Ontario Veterinary College, Toronto, were announced last night at the college building on Temperance Street. The following have passed a successful examination and as graduates are awarded the diploma of the Agriculture and Arts Association of Ontario:

Edgar A. Bogart, Kettleby, Ont.; Thomas H. Brooke, Don, Ont.; George C. Brownridge, Brampton, Ont.; James Conrad Carter, Gowanda, N. Y.; James H. Chesney, Brucefield, Ont.; John M. Colvin, Wingham, Ont.; Thomas A. Corsant, Ilderton, Ont.; Adam Elgas, Hartford, Mich.; William Elliott, Delhi, N. Y.; Joseph Fotheringham, Mason City, Iowa; George H. Gibb, St. Mary's, Ont.; Richard T. Kidd, Listowel, Ont.; John Edwin Law, Ithaca, N. Y.; Charles F. Leslie, York, Neb.; B. B. Myers, Linville, Va.; Bernard R.

Poole, England ; Robert E. Stevenson, Toronto, Ont.; Jacob Wilhelm, Shakespeare, Ont.; Louis A. Willson, Eglington, Ont.; George E. Young, Toledo, Ohio.

The following have passed primary examinations only in the subjects stated : Asa A. Brown, Alfred T. Goldie, in anatomy ; Horace Panet, James A. Wake, in materia medica."

OBITUARY.

FRANK J. HANSHEW.

We are notified of the death, on January 15th, of this bright member of the veterinary profession. He graduated at the head of his class, was beloved by his classmates, and honored and respected by all who knew him. Thirty years ago Dr. Frank J. Hanshew was born in Brooklyn, N. Y., graduated from Public School No. 1 of that city, and soon after entered the American Veterinary College, graduating in 1883, and was awarded the gold medal for the best general examination of his class. A few months after he was appointed veterinary surgeon to the Third Gatling Battery, N. G. S. N. Y., stationed at Brooklyn, where he, jointly with his brother, Dr. Elisha Hanshew, laid the foundation of a successful practice. The sudden announcement of his death from apoplexy was a shock to his friends, as the day previous he was in apparent good health and performed an operation that day, but on retiring that evening complained of his head, and after a few words, which seemed to indicate that he suspected there was serious trouble there, retired for the night ; was soon noticed by a member of his family to be breathing heavily, never gained consciousness, and passed away in a few hours. The class of '83 contained no more congenial member than him ; full of life, but sympathetic and generous to a fault ; yet withall a hard student, who was ever ready to dispense what knowledge he possessed, thus endearing himself to his classmates.

The funeral took place from St. Ann's Church on the Heights, Brooklyn, on the 19th inst., and the blending of the

Episcopal, the Masonic and the military rites was a touching tribute of the respect in which he was held by all his associates. The body, inclosed in a casket that was shrouded in the American flag, and completely covered with flowers, was borne to St. Ann's on the shoulders of his comrades of the battery, to the mournful notes of the bugle's funeral dirge, and the Rev. Dr. Alsop performed the last solemn rites of the Episcopal Church, assisted by twelve choristers. Before the body was removed from the church many of his classmates, who had attended the funeral, took a final leave of the youngest and brightest of their class, who was the first to leave for the great unknown.

W. H. P.

SOCIETY MEETINGS.

IOWA STATE VETERINARY ASSOCIATION.

FIRST DAY.

The fourth annual meeting was called to order in the parlor of the Savery House, Des Moines, Iowa, at 10 A.M. November 12, 1891, by the President, Dr. L. A. Thomas.

The members present were: Drs. Thomas, G. A. Johnson, M. E. Johnson, Inger, Derwent, Platt, Edwards, Shipley, Campbell, Stewart, McBerney, Morse, Miller, Brown, Stalker, Norton, Gibson, Ovens, W. B. Niles, Graves and Howell.

Guests: Drs. L. N. Shipley, of Sheldon; H. L. Chatterson, of Peterson; S. Whitbeck, of Elma; G. F. Starkey, of Boone; W. A. Haeck, of Harlan; W. H. Austen, of Newton; Woods Hutchinson (M.D.), of Des Moines.

The minutes of the last meeting were read and approved.

The Secretary called attention to the case of J. A. Campbell, stating that he had complied with the first part of the conditions for his exoneration. Dr. Campbell then stated that he had complied with the second condition, which statement was confirmed by Dr. Shipley. Upon motion Dr. Campbell was declared exonerated from all charges.

The President appointed Drs. Inger and Platt as Auditing Committee, and Drs. H. Shipley, G. A. Johnson and F. Edwards as Censors, to fill vacancies on the regular board.

AFTERNOON SESSION.

Association called to order at 1 P.M.

The Secretary read several letters and telegrams from absent members, expressing regrets for non-attendance.

The President presented the following address:

GENTLEMEN: Since the organization of scientific bodies such as this it has invariably been the custom for the presiding officer to base the subject of his annual address upon matters of recent scientific research pertaining to the profession.

But owing to the fact that the programme for this meeting promises to supply ample material of this nature, I feel that I may be permitted to deviate somewhat from the established precedent, and instead calling your attention to the growing necessities for professional advancement, and endeavor to point out some of the means by which we may more effectually promote the welfare of our patrons and the laity in general, thus enabling them to appreciate in a correct manner the value of the veterinary profession and to realize to what a great extent they are reliant upon this profession for the preservation of human health from a sanitary standpoint. Having this aim in view we should at this meeting discuss the necessity of stricter sanitary legislation, and formulate such resolutions as would tend to remedy the present deficiencies in our State laws.

For some time past it has become evident that some of the sanitary laws of this State require revising and amending in such a manner as to keep pace with the rapid and important advances made in medical science. It is true that in many respects this has already been accomplished through the increasing efforts of our State Board of Health, and that the laws now in existence have been carried out to their full intent, notwithstanding the repeated and almost insurmountable obstacles with which the Board has had to contend. But in order that the members of the Board of Health, and those acting under them, may effectually cope with all and every class of sanitary conditions, it is eminently necessary that such laws as have proved ineffectual should receive the earnest attention of our next Legislature, and proper measures be taken to revise and amend such sections as are found inadequate or void of beneficial results.

At the present time there is a law in existence which is both absolutely worthless and detrimental to the public health, as well as being productive of an immense annual pecuniary loss to the live stock industry of the whole State. I allude to Chapter 79, Laws of the Twenty-first General Assembly. At the time this law was passed the nature of hog cholera was not very well understood; owing to this fact a most unfortunate provision was made, allowing the owner of animals which had died from the effects of the disease to dispose of the carcasses, either by burning or burying them to a depth of not less than thirty inches.

According to the more recent investigations it has been proved that the burying of cholera hogs is a disastrous mistake, owing to the fact that the virus producing the disease increases in strength and severity through the medium of earthy matters, and that where hogs in this condition are allowed to be buried a

center of disease is thereby established the infective substance of which is brought to the surface through the workings of worms and rats and other species of like vermin. As the only effectual method of destroying the germ of hog cholera is by fire, it is evident that no choice should be allowed, and the law should be explicit on this point.

Hog cholera is an infectious disease, the primary symptoms of which are often much varied and complicated. It is therefore advisable that the law should provide stringent quarantine regulations, which should be maintained and carried out by the local Boards of Health under the direction of the State Veterinarian, and that the carcasses of all animals which have died from the effects of the disease should be destroyed by fire without removal from the premises.

One of the chief factors by which the disease has been spread to such an alarming extent is the existence of the so-called dead hog rendering establishments, one or more of which may be found in almost every county in the State; these under the present state of affairs are pest houses of the most virulent type, and are owned and maintained for the most part by the lowest and most unscrupulous class of men, who appreciate the fact that the law as it now stands is unable to reach them, and that they can therefore carry on their loathsome vocation with comparatively little, if any, interruption.

It would also be advisable for obvious reasons to prohibit all traffic in dead animals (except such as are slaughtered) without a permit from the local Board of Health, whose duty it should be to satisfactorily ascertain that no contagious or infectious disease had existed, and that the carcass was not in an advanced stage of decomposition.

THE MEAT INSPECTION LAW.

The time has now arrived when the people of the United States look upon the veterinarian of to-day as a sanitarian, and have resolved through the action of Congress to avail themselves of the services of this rapidly advancing branch of science.

The first intimation of this intention was manifested by the enactment of a meat inspection law, passed by the Fifty-first Congress of the United States. This affords an immense field for scientific research, as well as being a most important sanitary precaution. Under the provisions of this law a thorough system of meat and dairy inspection may be instituted in every county in this State.

It is therefore pre-eminently the duty of all local Boards of Health to at once make such regulations as will effectually prevent the sale and consumption of diseased meats and dairy products, and thereby protect the public from this great source of danger to human life.

Let us therefore, as veterinarians and citizens of Iowa, at once assume the aggressive in this matter, joining hand in hand with our sister profession, constituting ourselves the champions and advocates of sanitary food regulations.

Let every member of this Association avail himself of the daily opportunities afforded him within his own community to engender among his fellow citizens a true knowledge and understanding of the dangers which they continually incur, from eating food which is unfit for human consumption.

Our efforts in this direction will be productive of much good to the masses, for when the people thoroughly understand how many of the diseases of the human family may be prevented by proper sanitary precautions, they will demand competent inspection of all food before it is placed upon the market.

THE PROFESSION.

It is with great pleasure that we note the formation of a Western Iowa Veterinary Medical Association; and most earnestly do we recommend the formation of district associations in other parts of the State, this being the most effectual factor to promote fraternal fellowship and professional culture, at the same time establishing a bond of sympathy with our sister profession, thus enhancing to a great extent the usefulness and value of both branches of medical science.

As a profession we have many serious responsibilities to assume, and numerous obstacles to overcome.

For many years past the practice of veterinary science has been confined almost entirely to a class of persons having little or no education and but few ideas or ambitions beyond those of the ordinary stable element; on account of this it can well be understood how public sentiment refused to grant the same prestige to the veterinarian (?) of earlier days as it did to members of other professions.

During later years these conditions have been very materially changed, and the cloud of social and professional illiteracy enveloping veterinary science has been gradually but surely passing; until to-day we stand before the world a body of professional scientists ready and willing to assume all the responsibilities rightfully belonging to the domain of veterinary science, and demanding that society acknowledge our eligibility to meet within her halls and mingle on terms of equality with members of other reputable professions.

Both branches of medical science are to-day fairly launched upon the sea of investigation, striving to unravel the labyrinth of obscure and oftentimes mysterious causations of disease.

Many are the perplexities and disappointments which are encountered; and many the schismatic storms, which by their tempestuous blasts of jealousy, threaten to capsize and engulf this venturesome barque, bound on its perilous voyage of discovery; but nothing daunted, this gallant craft maintains her course, manned by her crew of stalwart investigators, ever and anon rising high on the crest of the waves, which but a short time before threatened in their fury to overwhelm her.

The port of destination is still far in the future; yet away out on the distant horizon we see the signs which betoken a successful voyage for our barque; and the promise that she will ultimately arrive safe within the scientists' harbor of "Deferred Hope;" and as a result we see the time approaching when the science of prophylaxis will, in a great measure supersede the curative medication of to-day.

One evidence of improved professional and social standing is in the increasing recognition of the importance of our profession by the sister and other professions and learned societies; the calls that are now made for professional

services and information by agricultural societies, colleges and stock-breeders' associations, and the position in life occupied by many of our members who are known to be gentlemen of ability and social standing.

To the medical profession for material assistance in the past we owe a debt of gratitude, and now that we are able to walk and act our part alone, as concerned with the well-being of the lower animals we trust to be co-workers with the sister profession in the extensive field of comparative pathology ; for in certain directions it is a well recognized fact that the two professions are in touch, necessitating a combined work for the complete and accurate investigation of those diseased communicable from animal to man.

So much is this beginning to be understood and appreciated that at the last meeting of the International Congress of Hygiene and Demography in London, there was an official recognition of the value of the veterinary profession, many veterinarians of note taking part in the discussions on tuberculosis.

May such be the course adopted here, when like diseases are under consideration in this country, for from such combination of forces great benefit will accrue to the public and both professions.

OUR ASSOCIATION.

There are many matters of importance to be discussed at this meeting, foremost among which is the subject of state veterinary legislation. For some years past we have had this matter under consideration and every effort has been made by the Committee on Legislation to encourage discussion and obtain an expression of opinion from each individual member of the profession, in order that when circumstances favored our petitioning the Legislature, we should be enabled to draft a bill such as would receive the unanimous support of all parties interested. The committee will report to you the results of their investigations, and if after due consideration of the same, the Association is of the opinion that it will be for the best interests of the profession to at once take active steps in this matter, let us spare no pains to compile a bill such as will effectually overcome and prevent the impositions and misrepresentations now practiced upon the public ; at the same time making provisions which will be fair and just towards non-graduates, and enable the public to understand the difference between qualified and unqualified practitioners.

GENTLEMEN: Allow me to touch briefly upon our pecuniary interests, which under the present circumstances are not unworthy of consideration. We have now over one hundred qualified veterinarians practicing in Iowa, many of whom have no fixed rates of fees to guide them in their charges ; and in many localities, as I am informed, professional services are rendered at prices in some instances barely remunerative ; this seems unnecessary and even productive of anything but beneficial results to the profession at large. There is ample work for all who are possessed of industry, ability and skill, at remunerative prices.

Can we not therefore combine in such a manner as to have a uniform scale of fees throughout the State, thus serving the public fairly and at the same time protecting our own interests?

In conclusion, gentlemen, allow me to thank you most sincerely for the honor conferred upon me, and for the courtesy shown me during my term of office as President of this justly prosperous Association.

In explanation of the first portion of his address, Dr. Thomas stated that a man owning a hog-rendering establishment in his county was in the habit of going to farms at night where hogs, dead from cholera, had been buried, and would dig them up and haul them over the public highways to his rendering establishment. That it was probable that the disease was propagated in this manner. This class of men studied the weaknesses of the law and made use of every subterfuge when prosecutions were instituted against them. The safe thing to do was to burn every cholera hog.

Prof. Stalker said it was advisable to resort to the burning process, for the large profits in the rendering business induced men to violate the law. In his opinion the hog buyers who went from farm to farm, walking through many hog yards the same day, and rousing up the lazy or ill ones to see whether they were all right, became, in this way, active transporters of the germs of hog-cholera from one pen to another.

Dr. Hutchinson: I am very much interested in the President's address, and as it voices the sentiments of the veterinary profession, I must congratulate you on the fact that you, as a profession, are so deeply interested in the coming phase of medical science, the prevention of disease. The medical profession must depend on you to do a large share of this work.

Dr. G. A. Johnson: I would like to say a word about the idea of a uniform tariff or fee bill; I am heartily in sympathy with that idea; we ought to have some standard to guide us. Graduates come into our State from Canada and elsewhere, and, not realizing the difference in countries and conditions, perform veterinary services at ruinously low rates, and establish prices in their communities far too low for legitimate professional fees, and I move that this Association proceed to draught a fee bill. Seconded by Dr. Brown.

Dr. Johnson then presented a fee bill which he had prepared, which was read by the Secretary. A live discussion followed by Drs. Morse, Brown, Gibson, G. A. Johnson, Thomas, Norton, Edwards, Stewart and Platt.

Moved by Dr. Inger to amend the motion so that it may be referred to a committee; seconded and lost.

The fee bill submitted was read again and some of the provisions modified, after which it was adopted by an unanimous vote.

Moved by Dr. Brown, seconded by Dr. Norton, to have one hundred copies of fee bill printed and distributed among the members; carried.

Dr. Stewart presented the following report on collective statistics:

GENTLEMEN—Your committee report the receipt of forty-eight notes on heredity from twelve members of this Association. Last year only five members responded to the call. If this ratio of interested members should continue to increase at the same rate during the next two years, every member would have at least one case to report in 1893. This year nearly all cases reported have a positive history, which makes the few notes received have a definite value.

Of the notes received, nine were cases of ringbone, thirteen spavin, nineteen specific ophthalmia, four kicking, two cribbing and one melanosis. The cases of ringbone were all males excepting one, and all bays excepting two. The disease developed in one at the age of three and one-half months, in five at two years, in the remainder at four, five and nine years. In two the history is not given, in seven the sires and dams were sound, in only one case were other offspring of the same sire similarly afflicted.

The spavins were about equally distributed as to color and sex, and were developed at ages varying from fifteen months to ten years, and the several breeds shared the defect about equally. The disease did not afflict the sire of any, but the dams of three had spavins. In all cases where the grandparentage could be traced only one was found to be spavined, and in this case three generations of females possessed this disabling blemish.

Specific ophthalmia is reported in eleven draught horses and seven trotters, gallopers and roadsters. Eight were bay, four black, four grey and two brown. The average age of development in the draught breeds was three years, in the others four years. This malady afflicted the sires of three, the dams of six, the grandsires of two and the granddams of four; it also developed in other progeny of five guilty sires and dams. In eight cases the notes show positive freedom of the progenitors from ophthalmia.

The four kickers are all females, with no history of heredity attached, and the two cribbers could not blame their ancestry.

The case of melanosis is of peculiar interest, in that the mare was a bay, and the disease became discoverable at the age of three; further, a full sister, of the same color, developed this disease at the same age. No trace of inheritance given.

We sincerely trust that interest in this line of research will be developed to the full degree which its importance merits, that the notes which are collected from year to year may be preserved for future compilation. You ought to secure five hundred cases with positive history next year. We conclude, from the lack of enthusiasm taken in this interesting field of research, that the fault

lies with your committee, and we trust that the committees who assume the conduct of this line of work hereafter may possess the charm or magnetism which will hold the attention of all the members to their duties in this matter.

The discussion on this report was quite general and brought out many histories evidencing the continuance of vice or deformity through three or four generations. Several instances were cited in which colts seemed to have acquired the vice of cribbing by association with an aged horse having this habit.

On motion, the report was received and the committee discharged.

The Board of Censors reported favorably upon eleven applications for membership and unfavorably upon one.

Moved by Dr. Morse, seconded by Dr. Brown, that the Secretary cast the ballot of this Association for each of the applicants found worthy of membership. Carried.

The Secretary—Pursuant to instructions, I cast the ballot of this Association for each of the applicants found worthy, and the following-named gentlemen are duly elected members of this Association: Samuel Whitbeck, Elma; L. U. Shipley, Sheldon; W. A. McClanahan, Ames; H. L. Chatterton, Peterson; J. O. F. Price, Clear Lake; J. E. Harrison, Burlington; R. Thomas, Oelwein; W. A. Heck, Harlan; G. F. Starkey, Boone; Wm. H. Austin, Newton; John J. Miller, Sioux City.

The Secretary submitted the following report:—

Mr. President and Gentlemen:

The increasing membership, the strength and character of the work done in our Association should be a source of congratulation, and a stimulus to further efforts to excel. Our code of ethics is wholesome and strong, and will aid us to esteem our profession. The line of painstaking investigation which is started in the study of heredity ought to lead us into many useful fields of research and develop us into a society of investigators. Let us develop this phase of scientific labor, and as a body do a definite work for the enhancement of our beloved profession.

The *Vis Medicatrix*, a journal representing the Iowa State Medical Society, offers the veterinary profession of Iowa a place in its columns for representation as a sister profession which has many lines of work in common. I recommend the acceptance of the proffered space, for the purpose of nurturing the field of comparative medicine, and engendering a social and professional bond of fellowship within our State, which must prove helpful to all laborers in the field of medicine.

The scope of sanitary science is rapidly extending and much of it should fall to the care of veterinarians. Let us but acquaint the physicians of our State with the fact that we are prepared and ready to do our own share of sanitary labor, and they will aid us to assume the responsible share that our special training has fitted us to do.

The number of graduate veterinarians in our State is about one hundred, of which sixty-one are members of this Association, and twelve more have filed applications for membership. Our present prosperity should stimulate our enthusiasm and zeal to make each succeeding annual meeting more profitable and enjoyable than any previous one, and prove sufficiently attractive to compensate for the expense and time incurred by the attendance of members from remote portions of the State.

There have been between seven and eight hundred communications issued from the Secretary's office during the past year. The necessary labor attached to the proper conduct of that office is now becoming considerable and has been done in the past without expense to this Association. As I expect to transfer the burden of this office to some one to be selected during this session, I would recommend that you at least make provision for defraying his necessary expenses incurred by attendance at these meetings. You are aware how important it is that the Secretary should be promptly on hand at the opening of each session. He must consider the Association first and his business interests second, while you may reverse this order. If his expenses be defrayed it will prove a stimulus to acceptance of the trust which otherwise might be declined by some young man well qualified to fill the office acceptably, and who by so doing would probably be in attendance at your next session.

I am gratified for the kind encouragement and cordial support you have extended to me as your Secretary, and I trust you will extend the same courtesies to my successor, for I hereby give you notice that I cannot undertake the onerous duties of this office another year. I hereby submit my final report for your consideration.

S. STEWART, Secretary.

The President: The Secretary's report is before you. What is your pleasure?

Moved by Dr. Norton, seconded by Dr. G. A. Johnson, that the report be received and discussed; carried.

Dr. Edwards: Do you understand that the Veterinary Department of the *Vis Medicatrix* is offered for the use of this society, and if so, are you to continue in charge of it?

Secretary: Yes! The limited space of four or five pages are at our command, but as to who shall have editorial charge of it remains for you to determine. Of course the *Vis* expects this department to be managed in the interest of comparative medicine, and in that spirit which will tend to unite the two professions in our State in a bond of common fellowship.

Dr. M. E. Johnson: Will it be expected of the editor that he shall furnish all the material for the space allotted?

The Secretary: The person who accepts the management of that work will surely desire the assistance of every member of this Association. This journal is only published by-monthly, and this department will not in any sense enter into competition with our two excellent veterinary journals, but is of value to us as a local means to an end.

Moved by Dr. Gibson, seconded by Dr. Platt, that Dr. Stewart be elected the Association editor of the Veterinary Department of the *Vis Medicatrix*; carried.

Dr. Stewart: I thank you for this confidence; I accept the trust with the understanding that I shall receive your assistance.

Dr. Miller: I suspect that our finances are not such that we can afford to pay our Secretary a salary, but I think it is no more than just that his expenses be defrayed, for he of all others should be present at our meetings.

Dr. Ovens: I should like to know how much money there is in the treasury.

The Treasurer: About fifty dollars.

Dr. Thomas: I do not think we can afford to pay the Secretary a salary with the present low annual dues, but we can afford to defray his expenses.

Moved by Dr. G. A. Johnson, seconded by Dr. Norton, that hereafter the necessary expenses of the Secretary and his dues shall be paid by the Association; carried.

Moved by Dr. J. E. Brown, seconded by Dr. M. E. Johnson, that the Secretary's expenses for this session be paid by the Association; carried.

EVENING SESSION.

7.30 P.M. Meeting called to order by the President.

Dr. J. E. Brown's paper, on "Parturient Apoplexy," was advanced on programme.*

* Published in this issue.

DISCUSSION.

The President: Dr. Brown has given us quite an exhaustive discussion of his theme, and has presented many phases of thought upon this very doubtful subject. It merits thorough discussion.

The Secretary: It occurs to me that the paper very fully canvasses the etiology and symptomatology and shows a comparative relationship between indigestion and parturient apoplexy. Many quotations are made from Prof. Williams' work on veterinary medicine, but I notice none from the recent papers by Dr. W. L. Williams, of Purdue University, and Dr. Tait Butler, of Mississippi Agricultural College, which papers discussed the cause and symptoms of this disease. I have had very little experience in the treatment or study of this disease. I call to mind a recent case, seen in that stage where difficult locomotion is a prominent symptom; she laid down from weakness several times while traveling about two hundred feet to shelter from an impending storm. Other symptoms characteristic. Administered this cathartic dose: magnesia sulphate sixteen ounces, soda sulphate sixteen ounces, powdered gentian one ounce and powdered ginger one-half ounce. Water sufficient to make a quart. Ordered the attendant to repeat the dose in one hour. The owner reported the animal better the next morning and the case recovered without further attention. A successful Omaha veterinarian employs this medication with copious rectal injections of warm soap-suds. He claims a high percentage of recoveries.

Dr. Norton: My experience in the treatment of this disease is limited, but I think nux vomica has served me well in a few cases.

Dr. Morse: I have been treating these cases lately with chloride of ammonium, and it seems to act nicely. I cannot explain how it acts, but consider it a useful agent. I give it in tablespoonful doses, repeated every few minutes for several doses. In the first trial I made with it, the owner was informed that there was no probability of recovery, but no harm could come from the use of the drug. The cow was

down, comatose, and I had no hopes of her recovery. The owner secured a quantity of the drug, and gave it to his cow as directed, and to my surprise he reported his cow much better the next day and she made a good recovery. I have now treated three cases with this remedy, two of which recovered.

Dr. Edwards: I have done my part toward killing several cases of this disease. I find that when the cow is comatose, and I hold her head up and pour the medicine into her mouth, I have been deceived in thinking she had swallowed it, but instead, all or a part finds its way down the trachea and the animal soon dies of suffocation. It is now my habit to introduce the medicine into the stomach through a probang, and I have a better per cent. of recoveries.

Dr. Thomas: I know several practitioners who use stimulants in these cases and give eight ounces of whiskey and eight ounces of spirits of nitrous ether as a dose. This treatment has failed with me.

Dr. Platt: I cannot accept Dr. Brown's theory that parturient apoplexy is due to anæmia of the brain. If it was due to plugging of the vessels with emboli, why do cases often recover so rapidly and completely? Surely the emboli are not readily dissolved and the obstructed circulation made normal again. I am satisfied that the brain trouble is due to congestion of the brain. The last case I had I treated with large doses of ergot with satisfactory results, and I shall try it in the next case.

Dr. G. A. Johnson: I find it a difficult thing to secure purgation with salts in these cases. I know that croton oil will purge, for a quack doctor in my community gave a case of this disease an ounce of the oil at night and gave seven ounces in the morning. The cow died from superpurgation.

Prof. Stalker called to mind a case of parturient apoplexy about which a farmer consulted him. He said: "The cow was down. I prognosed death, but advised a purgative, as they sometimes recovered after such a dose. A neighbor bled the cow, the cow recovered without the purgative dose. It is quite probable that some cases will recover without

medication or in spite of medication, so it will require many recoveries under any special line of treatment to establish the efficacy of that especial plan."

Dr. Brown: I will say that I have tried the ergot treatment advocated by Dr. Platt and my cases died. I do not think that purgation has saved any cases for me. Dr. Coswell, of Lincoln, claims to save a large per cent. of his cases by a mixture of fl. ext. pulsatilla and fl. ext. life root, given two drams every two hours. So after getting his prescription, I tried it on the first case I was called to and the case made an excellent recovery. I was happy. I used it in the next case and the cow died. My enthusiasm was now somewhat dampened, but I determined to give the remedy a thorough trial and used it on the succeeding six or eight cases with fatal results. I have yet to find a plan of treatment which I can recommend to my brother practitioners as a sure thing, but think the plan as outlined in my paper will yield the best results.

The Committee on Legislation reported as follows:

GENTLEMEN: Your Committee on Legislation reports as follows:

Upon consideration of the opinions expressed by the members of this Association at our last annual meeting, we recommend that measures be taken towards procuring the enactment of a law such as will effectually prevent the use of the titles pertaining to veterinary science by all persons unless they are graduates of some legally chartered or incorporated veterinary college or university; or who are willing to pass an examination before a Board of Examiners, in order to demonstrate the fact that they are competent to assume such title.

Two bills have been drafted upon the foregoing plan, which we respectfully submit for your consideration

We further recommend that this Association be incorporated under the laws of the State of Iowa, as a society having for its object the advancement of matters pertaining to veterinary science.

Articles of incorporation have been drawn up by the Committee, and the same are herewith submitted.

LOUIS A. THOMAS,
G. A. JOHNSON,

Committee on Legislation.

Dr. G. A. Johnson: I will say that one of the bills voices the ideas of the Western Iowa Association. I am in favor of endeavoring to secure the enactment of a desirable law, and these bills are presented as outlines intended to bring out your ideas in discussion.

The President: I am in favor of a bill which will protect the people from the pretensions of men who have never qualified properly for the practice of veterinary science; but it is an open question whether this is a fit time to make efforts to secure a veterinary law.

Dr. Gibson: I am in favor of the bill presented. I think that now is the accepted time. The stock raisers are with us and we can secure the desired legislation.

Dr. Inger: I move the adoption of the first bill as presented.

Seconded by Dr. Campbell.

President: Gentlemen, you have heard the motion. It is open for discussion. This is an important subject, and we want a full and free discussion by all.

Prof. Stalker: I would suggest that we do not act hastily in this matter. I have had some experience in efforts to secure legislative enactments, and I know it is very difficult to convince legislators that the promoters of a proposed law are not actuated by selfish motives and that the public good is properly considered. Now, I would suggest that we consult with some experienced legislator in the framing and perfecting a bill. He will have better notions than we as to what points will be unconstitutional or objectionable from a legislative point of view. If the bill be nearly right when it is submitted it will meet with less objections and obstacles, which kill so many bills in committee.

I would favor the appointment of the proposed examining board by the Governor instead of by this Association. The official relation of this Association with any clause of such a bill would be fatal to the bill. That feature of the bill proposed which allows any person to practice for pay is a strong one. The graduate does not need a law to prevent business competition when the competitor is restrained from holding out false claims as to his qualifications. If he fails under such conditions he should further qualify himself or find another vocation.

I am in favor of a judicious bill, but object to any bill which would legalize incompetents; they are more dangerous than non-legalized incompetents.

Mr. Wallace, editor of the *Iowa Homestead*, thought the proposed legislation was very reasonable and modest, and should enlist the co-operation of all the breeders' and stock-raisers' associations in the State, and secure the hearty endorsement of our stock and farm journals. He thought the *quack* should be relegated to his proper sphere and prevented from imposing upon a credulous public.

The Secretary: I would object to the passage of the motion. That feature of the bill which places the examination under the control of this Association is a bad one. It would smack very strong of class legislation, an idea very objectionable to the people of this country. I am in favor of leaving the appointment of the examining board with the State Executive, but think it best to provide that no more than two members of that board, if the number be confined to five, shall be graduates of any one veterinary school. Such a provision will prevent many possible disagreeable contentions for place on that board. I would also favor the compulsory examination of all applicants for a license to practice who come into the State after the enactment of the proposed law, whether the applicant possesses a diploma or not. We are aware that some men secure diplomas who are very incompetent in veterinary science, and many new veterinary schools are springing into existence, and some of them may prove to be diploma mills. You know that any qualified veterinarian could pass a reasonably satisfactory examination if he had ever been properly instructed, and such a provision would not tend to keep competent men from coming to our State, while it would keep out and prevent legalizing the incompetents.

I am heartily in favor of the clause prohibiting the payment of public funds for service rendered by non-legalized veterinary practitioners; also think that only legalized veterinarians should be competent to give expert veterinary testimony.

The President: I most heartily approve of the points raised by the Secretary, and I hope you will give them due consideration.

Dr. Edwards: I think we ought to pass some kind of a

law to restrain the quack from using any title used to distinguish a veterinary graduate from other men, and am in favor of trying now to secure the passage of such a law ; but if we attempt to legislate the quack out of his business, the effort will prove a dismal failure.

Dr. Campbell : I am in favor of the passage of a veterinary law and will do what I can to aid it. I agree with the Secretary that no one school should be given the majority in the examining board.

Hon. Horace Boise, Governor of the State, was here introduced, and the gist of our discussion on the proposed legislation was explained to him by Prof. Stalker. The Governor thought he saw nothing objectionable in such proposed enactment, and it might be of great value to the stock interests of the State ; however he would not commit himself to any such legislation until it came up for his executive consideration.

Dr. Ingar : It is quite evident that we are all in favor of making an effort to secure a desirable law, and I think we can do so if we go at it understandingly. I will withdraw my motion to adopt with the second's consent.

The motion was withdrawn.

On motion the report of the committee on legislation was accepted, and the committee discharged.

Moved by Secretary, seconded by Dr. Ovens, that we endeavor to secure the enactment of a judicious bill ; carried.

Moved by Dr. Norton, seconded by Dr. Miller, that a committee of three be appointed to draft a bill in conformity with the ideas expressed in this discussion, and urge its enactment by the next Legislature ; carried.

Moved by G. A. Johnson, that we incorporate as a scientific body. Seconded. Lost.

The Association adjourned to the banquet hall, where a delicious and attractive spread occupied the attention of all. Prof. M. Stalker presided as master of ceremonies, and many happy toasts and responses completed the pleasures of the banquet.

SECOND DAY.

MORNING SESSION.

Association called to order at 10 A. M. by President Thomas.

Roll-call elicited "present" from twenty members.

Dr. John McBirney presented a paper on "Alcoholic Solution of Mercuric Bichloride in the treatment of Fistulous Tracts." *

DISCUSSION.

Dr. Norton; It has been my opportunity to care for quite a number of cases of this character, and as you perhaps know they are usually old, bad cases which the country hoss-doctor has tried a long time to cure, before they find their way to the college hospital. These cases were given constitutional treatment by liberal doses of sodium hyposulphite and always with decided advantage. I think these cases persist in a decidedly chronic course for lack of proper general medication.

Dr. Edwards: I am interested to know whether your observations correspond with mine. I have seen quite a number of poll-evils and fistulous withers which seemed to be a sequel of distemper, and my experience leads me to think these troubles are usually preceded by some debilitating condition. These cases all yielded to treatment.

Dr. Niles: Did you use constitutional treatment?

Dr. Edwards: I did not.

Dr. Derwent: I believe the best results are obtained by frequent dressing of diseased parts; it is more important than the special medicines used.

Dr. Ovens: I treat these cases quite differently. I use a caustic but once and then dress the diseased tracts only once a week. I think it a disadvantage to disturb a diseased tract every day.

Dr. M. E. Johnson though the best results are obtained by dressing the parts frequently.

Dr. G. A. Johnson: I find cases of this character do nicely

* Printed in this issue of the REVIEW.

if the sinuses are opened freely, thoroughly cleansed and then packed with cinchonidia sulphate. This substance seems to retard or prevent suppuration and stimulates to healthy granulations. The cavity should be cleansed at the end of five to seven days after the first packing, then repacked if not found in a satisfactory condition, after which use the ordinary antiseptic dressing once or twice a week.

The President: I am treating these cases now by freely opening at the cavities, and irrigating constantly during the day time, for a period of three to five days, using a solution of permanganate of potash for this purpose. Then I dry the cavities and fill them with a mixture of iodoform in cosmoline, applied every three to five days. The results from this line of treatment have been the most satisfactory that I have tried.

Dr. Brown: I have made use of many agents, including mercury bichloride and hydrogen peroxide up to one year ago. Since then I have been using the actual cautery. I destroy the pyogenic membranes with the hot iron, then use the ordinary dressings.

The Secretary: The stage or condition in which the practitioner finds these cases must be taken into consideration when treatment is undertaken. I have seen cases before a pyogenic membrane was formed, simply a tumefaction, which if undisturbed develops into full-fledged fistulous withers, or consisted of a collection of amber-colored fluid with a quantity of ligamentous tissue floating in it, which seemed a simple affair when first opened, but soon it is discovered that a large amount of ligament is diseased, and that considerable time will be required for the healthy portion to cast off the diseased or necrosed portion. In the first condition mentioned, I have seen many cases recover after a simple incision through the entire tumefaction, which is usually of a fibro-cartilaginous consistency, followed by simple dressings. The second condition has demanded surgical interference several times before all the necrosed ligament can be removed, and which recover under the use of antiseptic dressings. In old standing cases I am in the habit of using what is known as corrosive liniment, which consists of mercury bichloride, one ounce; camphor,

one ounce ; turpentine, sixteen ounces, injected into the sinuses once a week.

Dr. Morse : I have seen several cases where the materies morbi has been transmitted to other parts by means of the lymphatic vessels, as for instance, a fistula of the withers would follow a poll-evil in the same animal, and the lymphatics between these parts be enlarged and inflamed. I am inclined to the notion that constitutional treatment is indicated in these cases.

Dr. J. H. P. Edwards read a paper on "Pneumonitis" * which gave rise to the following

DISCUSSION.

The President : Dr. Edwards is to be congratulated upon his paper. Many points of interest are brought out which merit discussion. As to the treatment of pneumonia I am satisfied that nursing is the most important part of it. I think that aconite is contra indicated, as it weakens the heart. Many cases die after the crisis owing to thrombi, which are formed because of a weakened heart. Belladonna serves me better. In the first stages of cases brought to my hospital I put them in a steam-room and give them a steam bath, then clothe very warm. I object to the laxative drugs, but favor a nutritious diet.

Dr. Morse : Does the stall in which a pneumonic patient dies become a source of infection? I have seen cases develop in horses which have been put into such a stall.

Dr. Niles : I have heard of several such cases but have seen none. I do not think pneumonia is dependent on exposure to cold. The disease is much more frequent in the Southern States than in this climate, and often developed without marked changes of atmospheric temperature. I think the disease is infectious. It is due to the activity of micro-organisms. I think use of aconite is indicated in this disease by a strong pulse, and should be given in doses of thirty minims and its action should be carefully watched. This drug lessens the rate and force of the pulse and respiration.

* Printed in this issue.

Dr. Morse: I would like to know if mustard or other counter-irritants are useful when applied to the sides?

Dr. Edwards: I doubt their utility.

Dr. Miller: I find aconite and mustard useful in the first stages only.

Dr. Platt: I do not think exposure to cold is necessary to the development of pneumonia. I have seen cases develop in harvest time. I believe it depends on a contagion. I treat these cases in the first stage by covering with blankets wrung out of hot water, which are again covered with dry ones, the wet blankets to be reheated as required. Some cases recover under this treatment.

Dr. G. A. Johnson: Cases of pneumonia caused by the presence of medicine in the lungs always die for me; and cases complicating or following influenza are nearly always fatal. In ordinary cases I use the following mixture: 3 i fl. ex. aconite, 3 i fl. ex. belladonna, 3 2 alcohol; give 1 3 at frequent intervals upon the tongue until the heart is controlled. I favor the use of heat applied to the chest walls and use sacks of heated salt.

Dr. Campbell: Since Dr. Morse asked the question, I remember of several instances where cases of pneumonia developed soon after the horse was put into a stall previously occupied by a horse sick with pneumonia. I am satisfied a stall will retain the infecting agents of this disease, and such stalls should be thoroughly purified before being used again.

The Secretary: I am very much interested in Dr. Edwards' paper, and the discussion which you have given it. You do not seem to dwell much on the symptoms, and are nearly agreed as to cause, and like myself are more interested in the treatment. My first experience in the treatment of pneumonia was very unsatisfactory. I lost all my cases. I thought the bounding pulse and hurried respiration indicated a sedative, and I used aconite in frequently repeated doses, which subdued the heart's action, but when the crisis came my patient's strength faded away, and death resulted.

Experience taught me that the throbbing heart and labored respiration were nature's effort to overcome the disease, and

if nature could be assisted a little it might succeed. To do this I now employ a diffusible stimulant, liquor ammon. acetatis (freshly prepared) in doses of four to six ounces, repeated as often as required, usually two to four hours; and to control the high temperature I combine with the first one or two doses of stimulants fl. ex. jaborandi $\frac{3}{4}$ i and acetanilid or antifebrin $\frac{3}{4}$ i; clothe the horse in warm blankets; take away all provender, but provide a bucket of water in which is dissolved an ounce of potassa nitrate. The drugs are administered as a drench in a pint of water. The above medication given in the first stages of this disease will produce copious sweating and a decided fall of temperature, which will eventuate into rapid convalescence in two or three days; of course the stimulant is continued at increasing intervals, and food is withheld until the third day. Nearly all cases of pneumonia secured in the first stage will yield rapidly to this treatment in this climate. Cases in the second and third stages I treat with stimulants and nutritious diet, with a fair percentage of recoveries. I find it is all-important to carefully determine what and how much food the attendant shall give, for an overfeeding often secures a fatal termination.

The details of several cases were here read from the Secretary's book of notes, which stimulated a spirited discussion concerning the first symptoms of pneumonia.

Dr. S. Whitbeck read a paper entitled, "A Study of the Microbes of Pus,"* which elicited the following

DISCUSSION.

Dr. M. E. Johnson: What agent do you find the most practical for the destruction of these pyogenic germs?

Dr. Beckwith: As a practical application I would recommend a one per cent. solution of hydro-naphthol.

Dr. Norton: Peroxide of hydrogen should not be diluted for use in this class of cases. I think this paper is a start in the right direction. We should encourage experimental work. There is much to be discovered before our professional knowledge is perfected.

* Will appear in the next issue.

Dr. Beckwith: It is important that fistulæ or wounds which have been cleansed with peroxide of hydrogen should be immediately protected from the air by proper covering.

The President: I am glad to know that our younger members have had the opportunity to acquire the technique of experimental investigation. They can do a part toward clearing up many problems which confront the practitioner.

Prof. Stalker: The experiment station in connection with the Iowa Agricultural College is established for the express purpose of making investigations in the interest of agriculture. Among other things it is prepared to investigate diseases of animals, or when notified of the occurrence in any section of the State of the outbreak of epizootic disease, an officer of the station will be sent to make investigations into the cause and prevention. If any member finds pathological tissues as to the condition of which he does not feel satisfied, send them Prof. Niles and he will be pleased to examine them and inform you of his findings.

The Secretary: This is surely a valuable opportunity, and I intend to avail myself of your generous invitation, and I would enquire of Prof Niles for instructions relative to the best method to prepare and transmit specimens.

Prof. Niles: Solid tissues should be cut into small cubes, one-half to one inch dimensions, removed by sterilized instruments from the substance of the tissue after the surface has been removed or sterilized by a flame or hot iron. Instruments are readily sterilized by a flame. The specimen can most readily be sent by mail in a twenty-five per cent. solution of alcohol, sealed up in a tin can. A tinsmith can readily seal tin cans with solder. If specimens are immediately wrapped in antiseptic gauze they are fairly well protected. Liquids should be sealed in sterilized glass tubes, packed with cotton in a box, which will insure safe transmission through the mail. Do not send whole organs, such as lungs, liver, etc., by express, for the chances are that they will have become putrid and useless before delivery.

The following report of interesting cases then took place:

REPORTS OF INTERESTING CASES.

President: I saw within the past two months a case of hydrocephalus in a colt, the circumference of its head being thirty-seven inches. I removed the fifth leg of a young colt at its junction with the body. The wound healed satisfactorily under antiseptic dressings.

Dr. Morse: I have divided the posterior tibial nerve in twenty cases for spavin and hock lameness and at first I thought I should be able to report to you a perfectly successful operation for hock lameness. Nearly all of them go straight and smooth immediately after this operation, and some continue to do so now; but many of them go lame again after a hard drive, and upon examination I find the divided nerves are grown together again even in cases where a half inch or more of the nerve had been resected.

In the operation of neurotomy for the relief of navicular lameness I find the same difficulty, and propose to stitch the distal portion of the divided nerve into the wound so that it cannot unite with the approximal portion, and I will report the results to you next year.

I would like to know what you are doing in cases of bog spavins and thoroughpin. I have been aspirating the excessive fluid from the articular sack, and then injecting into the cavity a solution of iodine. The iodine sets up a lively inflammation which causes the animal intense pain; it will become very restless, tuck up in the flanks, and even become wet with perspiration; the inflamed limb will be held from the ground. The pain will subside in a few hours, the toe will come to the ground in two or three days, and the animal is turned to pasture for three or four months, when recovery will have been completed.

Dr. Thomas: I am treating this class of cases by an elastic bandage made to lace on the parts, and I think the results are very satisfactory. The bandage is made on the same principle as the elastic stocking and adapts itself to the parts very nicely; compressers are applied over the sacculated points.

Dr. M. E. Johnson: I wish to inquire what preparation and strength of iodine Dr. Morse uses.

Dr. Morse: Any solution may be used. I employ the common tincture of the shops and inject a drachm or more.

Dr. Stewart: I have injected tincture of iodine into the cavity of bog spavin after evacuating the accumulated fluid, and a satisfactory result has been the issue in four or five months. I think we are too timid in this class of cases. I do not know of a fatal result following this method of treatment.

Dr. Edwards: The firing method has been successful in my hands. I puncture the enlargement at several points with the red-hot cautery point, the serum escapes, and the inflammation which follows results in a cure.

Dr. Miller: What do you do with bursal enlargements at the fetlocks? Will injections of iodine cure them?

Dr. Morse: I open them freely with a scalpel and let them heal by granulation. I find it a very safe and satisfactory way to treat them. I mean what is known as windgalls or bursal enlargements.

The Secretary exhibited a book of notes, which attracted general attention on account of the form of note sheets used and the binder used to secure their preservation. The note-sheets are issued by the printer in tablets of 100, and when used are immediately put into an adjustable binder and indexed both for disease and owner of patient. He claimed for his notes convenience, completeness, durability and ready reference, and said the keeping of such notes made the practitioner more careful to secure the minute details of symptoms and history of his cases, more careful in diagnosis and more definite in the use of therapeutic agents.

The following officers were elected: President, M. E. Johnson; First Vice-President, F. H. P. Edwards; Second Vice-President, J. E. Brown; Secretary-Treasurer, S. Stewart; Censors, H. Ovens, J. H. Platt, A. B. Morse.

President Johnson was duly installed, and appointed the following committees:

Committee on Legislation: L. A. Thomas, M. Stalker, J. E. Brown.

Committee on Collective Statistics: F. H. P. Edwards, J. D. Inger, J. Miller.

Resolutions of respect to the memory of Dr. A. E. Bosquet were adopted.

On motion, a vote of thanks was tendered the proprietors of the Savery House for the use of its parlors, also a vote of thanks to Drs. Morse and Howell for interesting clinics.

Adjourned, to meet in Marshalltown during the autumn of 1892, the time to be fixed by the President.

S. STEWART, *Secretary*.

ONTARIO VETERINARY ASSOCIATION.

The annual meeting of this Association was held in the Ontario Veterinary College, Toronto, on Dec. 23d, 1891.

The President, Mr. Gible, of St. Mary's, Ont., in his opening address gave some good advice; he also strongly advocated the advantages of periodical meetings of the profession for the purposes of discussion and mutual improvement.

Messrs. Robson, Kidd and Sisson were duly proposed and elected members of the Association.

On motion by Mr. Lloyd, seconded by Prof. Smith, Principal of the Ontario Veterinary College, Prof. Law, of Cornell, who was present, was unanimously elected an honorary member.

Mr. John Wende read an interesting paper on some cases of the accidental poisoning of horses by castor oil bean mixed in the food, which had occurred in the course of his practice.

Mr. Cowan gave an address on hog cholera, of which he has had considerable experience. He mentioned the difficulties frequently occurring in diagnosis, without a post-mortem examination, the temperature and pulse for various reasons being unreliable guides, also the skin-lesions—blue, red or purple patches may or may not be seen. He mentioned the hæmorrhagic lung and ulcerations of the intestines as diagnostic, the ulcerations usually occurring in the glands in the neighborhood of the ilio-cæcal valve.

Prof. Law also gave some very interesting information in relation to the disease.

Mr. Mole spoke of the tenderness of the skin to the touch which he had observed in Ireland. Mr. Cowan had not noticed this condition in Canada. Prof. Law mentioned that symptom as a peculiarity of the disease in Great Britain.

A discussion on changing the date of the annual meeting then took place. It was ultimately decided that instead of doing so this year, a meeting of the Association should be held in June, 1892, in the city of London, Ontario.

The following officers were duly elected for the ensuing year: Mr. MacArthur, President; Mr. John Wende, First Vice-President; Mr. W. H. Burns, Second Vice-President; Mr. C. H. Sweetapple, Secretary; Mr. W. Cowan, Treasurer.

Messrs. Hand, W. J. Wilson, Steele, Gallanough, Hopkins, Quinn, Kidd and Weddefield, Directors; Messrs. Elliott and O'Neil, Auditors; Messrs. Wilson and O'Neil, Delegates to West-Fair Association; Mr. W. Cowan, Representative to Central Farmers' Institute.

Messrs. Wende, Cowan and Gibb were appointed to read papers at the meeting to be held in London, in June.

C. H. SWEETAPPLE,

Secretary and Registrar.

UNITED STATES VETERINARY MEDICAL ASSOCIATION COMITA
MINORA.

A meeting of the Comita Minora of the United States Veterinary Medical Association will be held at "The Arena," 41 West 31st Street, New York, on Saturday, February 20th, 1892, 8 P.M.

Arrangements for the International Veterinary Congress at Chicago, 1893, and the place of meeting of the Association for 1892, will be considered, in addition to matters of routine business.

Suggestions and communications to be for the Comitia Minora should be submitted to the Secretary.

By order of the President,

R. S. HUIDEKOPER.

W. H. HOSKINS, *Secretary,*

12 South 37th Street, Philadelphia.

ALLUMNI ASSOCIATION OF THE AMERICAN VETERINARY
COLLEGE.

Members of the Alumni Association of the American Veterinary College, who expect to attend the Annual Banquet, which will take place on the evening of March 24th, 1892, will please notify the Secretary of the Association, in order that he may determine how many covers it will be necessary to provide for.

Notice of place and hour will appear in the next number of the REVIEW.

E. B. ACKERMAN, D.V.S., *Sec'y*,
141 West 54th Street, N. Y. City.

CORRESPONDENCE.

LIVE AND LET LIVE.

Mr. Editor :

Your correspondent's inquiry—Are employees of the Bureau of Animal Industry allowed to engage in private practice?—surely interested a great many readers of the December number of the REVIEW. I am practicing in a locality where anything in the shape of private practice by the Bureau's representative would be satisfactory, but there is no *privacy* or *delicacy* about it; the humble, hard-working D.V.S. is assailed on every side with such titles as United States Veterinary Inspector, United States Veterinarian, State Inspector Veterinarian, United States Inspector of Veterinarians; and Veterinarian to the President of the United States, I expect, will come next. Now this sort of brass-band parading of titles by political charges will never harm any intelligent practitioner as a rule, but there are, perhaps, numerous instances where a veterinarian of education and professional ability represents the Bureau, and if he is disposed to work the public with the above titles, then beware, Non Nobis Solum, for one is then in danger of being snowed under. Does the Bureau permit it, you ask? Yes, apparently ;

and why not? Surely the Government is endeavoring to "protect the hog."

Respectfully,

IMPRIMATUR.

REMOVAL.

Our readers will note change of address of the Drevet Manufacturing Company, in whose laboratory the preparations of Charles Marchand are manufactured, from No. 10 West Fourth Street to 28 Prince Street, New York City. The removal will be made on the 15th inst.

PRACTICE FOR SALE.

In a city of forty-five thousand (45,000), with some country practice. No other graduate within 110 miles. Address,

I. POE, V.S.,

KNOXVILLE, TENN.

AMERICAN VETERINARY REVIEW,

MARCH, 1892.

EDITORIAL.

ANTI-RABIES INOCULATIONS.—The progress achieved by scientific medicine of late years, notably in the study of the nature of contagious diseases, has, no doubt, been very great, not alone in respect to their treatment, but more notably in respect to their phylaxy. But while the results which have already been reached have undoubtedly had the effect of proving that these diseases are amenable to treatment, they have also proved, with a still clearer demonstration, that their scientific management ought principally to consist in the institution of the prophylactic measures which, if well perfected, will render theories of treatment and cure of quite secondary importance, by preventing the development and maturity of incipient and possible cases in the future.

It is, in fact, becoming a well settled doctrine that if sanitary measures are of essential importance in their management, the true, scientific and almost certain way of keeping them under control and preventing their outbreak, and, in fact, to subdue them, consists in the application of the measures recommended to us by Pasteur, Chauveau, Arloing, Klein, Koch, Salmon, Law and many others, by whom we have seen them applied in late years. It does not pertain to the object we have in view to recall the effects obtained in the management of small pox by the Jennerian vaccination, but if we consider the results which have been obtained by the inoculation of attenuated virus in some of the contagious

diseases of animals, the query necessarily presents itself to those who are brought in connection with the treatment of our domestic animals, and the care of their health, why should not the benefits of prophylactic vaccination be extended to this class of subjects, in all diseases that are communicable to mankind, and their owners be relieved from the danger and loss which may accompany or follow an outbreak of the contagions in question among other species of their live stock?

The experiments are no longer tentative, but have passed into demonstrations, and if their proven and indisputable value and the wide extent of their applicability have not yet become so clearly patent to the universal perception and appreciation of the intelligent classes—indeed, of all classes—as it ought to be, it is difficult to say who is most to blame for it, though we fear that to veterinarians a large share of the blame must be charged.

To whom is the world indebted for the control of smallpox in mankind by vaccination, so far as it has been secured? Of course, and emphatically, to physicians. And what hinders the veterinarian from occupying a position in respect to the contagious diseases of the domestic animals corresponding with that of the physician towards his patient? Why does he not apply to animal diseases the modes of prophylaxy that have proved so satisfactory in the hands of the human physician? And why is not the veterinarian as ready to see the advantage of applying inoculation to animals which are exposed to contagious diseases, the majority of which, moreover, are communicable to man, as the physician is to extend the benefits of vaccination in a threatened outbreak of smallpox in the human family?

Is not anthrax, whether bacterian or bacteridian in its nature, prevented by inoculation, according to the system practised by Pasteur, Chauveau, Cornevin? Cannot chicken cholera be prevented by inoculation, as recommended by Salmon and, we believe, Law? Is not even hog cholera claimed to be preventable by the same means, as recommended by F. S. Billings? Is it not also claimed that pleuro-pneumonia in cattle can be similarly kept under control? Does the effica-

cy of inoculation in the treatment of rabies need any more proofs than those which are already furnished by the reports of the various Pasteur Institutes all over the world?

In the presence of such an array of facts, why is it that inoculation is not practiced on a larger scale, if not universally? Why is it that veterinarians do not, in the interests of their own employers, resort to it oftener? And since outbreaks of anthrax, chicken cholera, pleuro-pneumonia and hog cholera have all proved amenable to control, or we might almost say prevention, by inoculation, does it not behoove the veterinarian to take advantage of it as one of the most important of all sanitary measures at his disposal?

Let us consider one of these affections. One, rabies, for instance, communicable to mankind; indeed, to almost all animals, as far as we know. Is not the existence of a single affected animal, until he is removed by death and cremation, a permanent threat to life itself, not to speak of possible losses and costs of a pecuniary character?

Since the application of the Pasteur treatment or inoculations to man, the danger of losing life through rabic inoculation has become a thing almost of the past. But what of the pecuniary loss in cases of possible outbreaks amongst animals?

A mad dog in his wanderings hither and thither attacks indiscriminately, it is usually impossible to know how many horses, cattle, sheep, dogs and pigs, if he has not begun his ravages in his master's house and among his children and neighbors. These may resort immediately to a Pasteur Institute and there receive the benefit of the treatment which has proved so successful for years; but what of those other unknown victims which have received into their organisms the virus which sooner or later must prove to be a sentence of death?

To illustrate this we may be allowed to mention a single case, the result of an outbreak which occurred some months ago in Pennsylvania. Rabies developed itself in a large dog kennel containing some sixty animals. Subsequently, at different dates, eight or ten successively became affected and

died, and the remainder, about fifty, were necessarily destroyed. The result in dollars and cents was a loss of more than \$2,000, the cost of replenishing the kennel.

What then are the obligations imposed upon us, or at least, which recommend themselves to our serious consideration?

Preventive inoculation appears to be the proper thing, an inoculation which, applied to bitten animals, may, as it does in man, prevent the further development of the disease; and above all, preventive inoculation, which will provide the organism of the animal subjected to it with an immunity fully proved to be attainable. As the final result of a universal system of inoculation, we might count on the removal of the possibility of the transmission of the disease, because only unfertile soils are exposed to the culture of the virulent element which might be deposited in their organisms.

We have for years considered inoculation in cases of contagious diseases of animals as the best means of controlling their diffusion and preventing their epidemic ravages. The improvements introduced in late years in the preparation, conservation and transportation of the preventive virus, have placed at the disposal of the veterinarian a sanitary means of control which it would seem can be no longer ignored, in the proper execution of their professional obligations.

In a letter addressed to us by our friend Dr. P. Gibier, of the New York Pasteur Institute, he solicits our opinion of the subject of anti-rabie inoculations as applied to all dogs; we answer him in these remarks with the feeling we have held for years, going even further than his suggestions.

We say: Yes; the inoculation of dogs against rabies, socially and humanely considered, would be a most advantageous measure for both beasts and man.

Yes; the inoculation of all animals bitten by other rabid animals ought to be resorted to as a universal system, if only for financial reasons.

Dr. Gibier's letter is in the words following:

Dr. A. Liautard :

DEAR SIR: Allow me to ask your opinion on a subject to which I have given much thought, since our celebrated Pasteur has made, and for the benefit of his race promulgated, his great discovery of the preventive treatment of rabies.

Being very fond of dogs and having owned several, my anxiety is always excited by the appearance of any symptoms of illness in them; and often has the fear of hydrophobia on such occasions haunted my mind and kept me awake at night. The idea of their contracting rabies and biting, perhaps members of my own family, or my relations, or friends or others, is a terrible one. What moral and social responsibility have I not assumed? I once knew a wealthy person reduced to ruin by a law suit brought against him in the case of a child who had died from rabies caused by the bite of a dog belonging to him.

All these troubled feelings, I am glad to say, have left me. I now possess a beautiful English mastiff which I have placed under a complete course of anti-rabic treatment, and as now, after three months, he enjoys the best of health, I have no more fear about him or his bites or his being bitten. He is hydrophobia-proof.

Now the principal object of this letter is to ask your opinion on the question of systematically inoculating dogs against rabies. Would it not be a more certain way to suppress the disease than the police regulations now existing and which are but partially enforced? Vaccine virus is preserved perfectly pure for a long time, when mixed with sterilized glycerine, and the same condition exists for rabic virus. It can be kept for several weeks in that fluid without losing the degree of virulence which it possessed at the time the mixture was made.

In one of the last numbers of the *Annals de l'Institut Pasteur*, Dr. Calmette, in an article upon rabic virus, reported that having but few patients, he had preserved it in glycerene. The authority of Dr. Calmette cannot be ignored; he is the author of one of the most interesting works on bacteriology, and has recently been sent to Cochin China to establish a bacteriological institute for that region.

To resume: Do you believe that if veterinarians were provided with anti-rabic virus, as physicians are with that of the Jennerian vaccination, owners of dogs would be willing to adopt a measure which, as far as it concerns the prophylaxy, has made its proof? This virus can be kept in good condition for weeks, and consequently can be delivered at any distance to the veterinarian who desires to use it. The idea is so simple that I am afraid it will not be entertained for that very reason. However, whatever may become of the suggestion, I shall be thankful for your professional opinion, etc.

Very respectfully yours,

P. GIBIER, M.V.D.

Pasteur Institute.

VETERINARY DEPARTMENT OF HARVARD UNIVERSITY.
—There have been changes in the faculty of the Veterinary Department of Harvard, and among them is the appointment

of Dr. F. Osgood, M.R.C.V.S., late of Springfield, Mass., to the chair of operative surgery. We have before alluded to the connection of Dr. Osgood with Harvard University, and his appointment to so important a professorship confirms our appreciation of his fitness for such a professional distinction. It will be a good thing for Harvard. Prof. Osgood takes with him his late assistant, Dr. Lebow, formerly house surgeon to the American Veterinary Hospital, and a graduate of the American Veterinary College. Dr. Lebow is said to be urged to a course of special anatomical work, in view of a chance to fill a vacant demonstratorship.

There are also rumors that two other veterinarians of Boston and its vicinity are likely to be connected with the reorganized faculty. Both of these are also graduates of the American Veterinary College. Well, we will also say that this is a good thing for the American Veterinary College.

THE PEORIA ACTINOMYCOSIS TRIAL.—We have received a long and interesting *critique* of the report of our associate, Dr. W. L. Williams, written by another of our assistant editors, Dr. O. Schwartzkopff. The crowded condition of the present number compels us to defer its publication until our next.

ORIGINAL ARTICLES.

A STUDY OF THE MICROBES OF PUS.

BY S. WHITBECK.

(A Paper read before the Iowa State Veterinary Medical Association.)

HISTORICAL.

Senn, in his work on Bacteriology says, and truly, "Surgical pathology has become almost synonymous with surgical bacteriology." Pathology cannot be well studied without a knowledge of pathogenic micro-organisms. Nor can a medical man become a successful practitioner until he acquaints himself with this new science. Although it is true that some

ancient writers like Verro and Columella expressed the opinion that living organisms entered the animal economy and caused disease, yet bacteria were not knowingly discovered until 1675, when Leuwenhoek observed what he termed minute globules in putrid water and later in tartar from teeth. But little progress was made for the next one hundred and fifty years. During the rage of cholera in Europe some investigators declared that this disease was caused by organisms which proved to be *Oidium lactis*, which was found growing on the excreta of patients suffering from cholera. Other equally absurd statements were made. A microbe craze naturally followed these discoveries, and over-zealous workers soon brought disrepute on the whole subject. Henle, the celebrated anatomist and physiologist of the Gottengen University, brought strong arguments in favor of the germ theory, but they were received with little credit. Cagnard-Latour and Schwann showed the organic nature of yeast. They proved that yeast fermentation was due to the growth of living organisms. Liebig was one of the most powerful opponents of this theory; he held that fermentation was due to chemical changes. Schwann and others also showed that putrefaction of meat did not occur in the absence of bacteria, and that all vital activity ceased when yeast was absent from fermentable substances. Pollender and Brauell noticed very characteristic rods in blood taken from animals affected with anthrax; later these rods were shown to be living organisms that spread the disease. Pasteur has materially strengthened the germ theory of disease. Koch has immortalized his name by his investigations of various diseases, particularly anthrax, cholera and tuberculosis. His work has been especially valuable in using solid media, as agar-agar, gelatin and blood serum, in which the various germs may be cultivated.

From the standpoint of pus and organic life, much must, however, be accredited to Lister, who obtained excellent results in antiseptic treatment of wounds. This made it seem more than probable that suppuration was due to an organism, and that the most scientific way to treat suppurating wounds

was by the application of antiseptic agents, as corrosive sublimate, carbolic acid and other antiseptic agents, in solution of sufficient strength to kill the organism and yet not injure the tissue. Although it has been shown that certain substances, like croton oil and petroleum may cause inflammation, they run a certain definite course, while inflammations depending upon microbes are of less definite character and show a tendency to extend to adjoining structures.. Long before the specific micro-organisms of suppuration were discovered, living organisms, called by some animalcules, but now known to be of vegetable nature, were found in pus and believed to be the cause of suppuration. Thus Klebs in 1865 detected cocci in pus taken from the uriniferous tubules in cases of pyelonephritis which followed suppurative cystitis. The same author in 1872 again referred to the same micro-organism which he had previously described, showing that it existed in the tissue and organs which were the seat of suppurative inflammation before pus had formed. He also placed great stress on the fact that only local inflammation resulted from local infection, but when the germs entered the circulation grave symptoms of septic infection followed. In 1881 Ogsten announced the results of his examination of sixty-nine abscesses. In seventeen of these cocci were found, arranged in chains and are now termed *Streptococcus*. In thirty-one cocci were found arranged in groups; these are now known as *Staphylococcus*. Both kinds were found in sixteen, while in a number of so-called cold abscesses micro-organisms were absent. From this time on the work done was mostly in isolation and classification of the different germs, based on their physiological characters and microscopical appearance. Following is a list of microbes of suppuration, those most frequently found coming first.

Staphylococcus pyogenes var. *aureus*, Rosenbach.

Staphylococcus pyogenes var. *albus*, Rosenbach.

Staphylococcus pyogenes var. *flavescens*, Guttmen.

Staphylococcus pyogenes var. *citreus*, Passett.

Bacillus pyocyaneus, Gessard.

Bacillus fætidus, Trevisan.

Streptococcus pyogenes, Rosenbach.

Four other germs are often present in pus : three of which, *Staphylococcus Passetii*, Trevisan ; *Staphylococcus cereus*, Trevisan ; and *Staphylococcus candidus*, Warrington, are non-pathogenic. No experiments have been made with the fourth, *Micrococcus Rosenbachii*, Trevisan. Of pathogenic microbes *Bacillus pyocyaneus* is probably most malignant, while the *Staphylococcus pyogenes*, var. *aureus*, is most often found. The most important advances of late have been in the line of antiseptic treatment.

Very careful observations have been made to show the relative importance of the different antiseptic agents. Dr. A. C. Abott, of Johns Hopkins University, after making a series of experiments with corrosive sublimate, finds two serious objections to the use of that agent. First, the albumen of the tissue tends to diminish the strength of, or renders entirely inert, the solution employed. Second, the integument of the tissue is materially injured by the applications of solutions of this salt. Hence this author would not place corrosive sublimate among the best of disinfectants. Similar objections have been raised to the use of carbolic acid. But with all the work upon this part of the subject no definite conclusions have yet been reached. Peroxide of hydrogen and hydro-naphthol are comparatively new agents, to which the above stated objections do not apply, and are being used by surgeons, as local antiseptics, with fair success.

LABORATORY WORK.

Preliminary to the study of the different germs of pus, it was necessary to prepare media in which they might be grown. Bouillon, agar-agar, gelatin and sterilized boiled potato in tubes were the media used. Bouillon is made by using one pound clean, finely chopped beef, to which is added a litre of water, allowing it to stand about twelve hours, then straining, bring to a litre by the addition of more water, then adding ten grams of good peptone, five grams of salt and enough sodium bicarbonate to neutralize. The gelatin was made in a similar manner by the addition of seventy-five grams of gelatin before neutralizing ; twenty grams of agar-

agar being substituted for the gelatin in making agar-agar. After the above preparations each media was heated to the boiling point, filtered into flasks, sterilized for three subsequent days in a steam sterilizer, then placed in test tubes previously plugged with cotton and sterilized in dry sterilizer at 130° C. Each tube was filled to about one-fourth its capacity and all again sterilized in the steam sterilizer at 100° C.

The laboratory work consisted in growing the several germs in the different media and inoculation experiments with mice and rats.

STAPHYLOCOCCUS PYOGENES VAR. AUREUS.—August 7, inoculated tube of gelatin from a boil on student's wrist. August 8, no growth discernable. August 9, a small white growth on surface. August 10, gelatin half liquefied and the growth adhering to side of tube, of a yellowish color; made a microscopical examination and found the germ to be a small organism arranged in groups. August 12, gelatin entirely liquefied. A tube of agar-agar was inoculated. August 13, a very small white growth had developed on the surface. August 14, growth as large again and slightly yellow, with a flaky white growth along track of needle. August 15, one half surface of agar covered with a deep yellow growth. On August 19, a tube of bouillon was inoculated. August 20, bouillon quite turbid and a slight sediment of a yellow color, more growth on agar-agar. Inoculated a rat over root of tail from agar-agar culture. August 21, abscess at seat of inoculation, from which the same germ previously mentioned was isolated. August 22, rat died in forenoon; examination showed the presence of a small organism in the liver, an inoculation from liver in agar-agar developed an impure culture from which the aureus was isolated. Two mice were inoculated on the 25th, one yielding the same results produced on rat, and other an abscess at seat of inoculation. On the 27th, inoculated sterilized potato in tube. August 29, a small yellow growth at point of inoculation. August 31, growth extended over entire surface of potato and of a deep yellow color.

Conclusions.—A germ of suppuration, and when gaining

entrance into circulation, septicæmia and death follow. The aureus was isolated from two other cases in the course of my studies, from a deep seated abscess on the neck of a horse and from a boil on a student's face.

STAPHYLOCOCCUS PYOGENES VAR. CITREUS.--August 12, inoculated gelatin with pus obtained from fistula immediately after being lanced. August 14, a minute white growth on surface on track of needle. August 16, growth extended all over surface of gelatin, which was partially liquefied. August 17, gelatin wholly liquefied and a white sediment on bottom of tube; inoculated bouillon from gelatin culture. August 18, a number of white colonies were visible throughout the bouillon, which consequently had a turbid appearance. August 19, inoculated agar-agar from gelatin. August 20, a white growth developed along track of needle and at point of inoculation. August 21, growth about one-quarter inch in diameter and arranged in radiating circles, the inner circle of a darker color than those at outer part of growth. Microscopical examination showed it to be around organism, arranged in little bunches sometimes slightly chained or singly. August 21, inoculated sterilized potato in tube. August 22, a small white growth at point of inoculation; by the 23d this growth had developed over one-third the surface of the potato, and was arranged in radiating circles, each external ring being of a lighter yellow hue, as on agar-agar. On the 24th inoculated a mouse. August 26, a small abscess at seat of inoculation; agar-agar inoculation from this abscess produced the same characteristic growth previously mentioned. August 28, mouse found dead.

Post-mortem examination showed no internal lesions, though a round organism was seen on section of the liver under the microscope. I failed to get a pure culture of the original organism. One rat and two mice were inoculated with this germ later on. An abscess developed at seat of inoculation in one of the mice and the other died. No lesions were presented on making a post-mortem examination, though a pure culture of the citreus was isolated from an agar-agar inoculation from the spleen.

Conclusions.—An ærobie organism causing suppuration, and when gaining entrance into the circulation, septicæmia.

BACILLUS PYOCYANEUS.—August 12, inoculated gelatin from discharge of an open synovial bursa. August 13, a small white growth developed at point of inoculation. August 16, gelatin liquefied, and of a greenish color. August 18, inoculated agar-agar. August 20, a small white growth at point of inoculation which by the 22d had spread all over the surface of media, and was of a dark white color. August 28, agar-agar was of pale green color. August 15, inoculated bouillon from gelatin. August 16, bouillon of a dark green color. Microscopical examination showed the germ to be a bacillas of medium length, scattered through the field without any definite arrangement. On the 18th inoculated potato in tube. August 19, a white growth at point of inoculation. August 21, growth extended over entire surface of potato, producing the characteristic green color presented by the other media inoculated with this germ. On the 27th inoculated a mouse. August 28, mouse dead, a large abscess having developed at seat of inoculation.

On post-mortem examination the entire viscera presented a dark green color. Inoculation on agar-agar from the liver and peritoneal cavity produced a growth of bacilli similiar to that described above. Two more mice were inoculated, producing abscesses at seat of inoculation; in this connection it might be well to say that a large amount of the culture was used in first instance and the inoculation made well under the skin, while the two latter mice were inoculated externally on an abraded surface produced by a small pair of scissors. A rat was inoculated September 8th, but without any effect.

Conclusions.—An ærobie bacillus producing a pigment, which Gessard called pyocyanin, that colors the media green. Germ of suppuration, and when gaining entrance into the circulation in sufficient numbers, causes septicæmia and death.

PYOGENES FŒTIDUS. September 12, inoculated agar-agar from liver of horse that died of septic poisoning. September 13, a white growth at point of inoculation. September 14, growth

but little larger, with a few granular points surrounding the main growth. September 15, inoculated a tube of gelatin. September 16, a small granular growth along track of needle and a white growth one-fourth inch in diameter on surface. Microscopical examination showed the germ to be a short bacillus, somewhat shorter than the pyocyaneus. September 18, inoculated potato in tube. September 19, a white growth at point of inoculation, slowly spreading over the entire surface. September 18, inoculated bouillon. September 19, bouillon slightly turbid, small white colonies throughout the media. Inoculated a rat from agar-agar culture. September 20, a small abscess at seat of inoculation. In the afternoon the rat died. A culture from the abscess taken before the rat died showed bacillus of various lengths. From this the short bacillus was isolated by means of a roll tube agar-agar, and grown on the different media with the same results as mentioned above.

No internal lesions were presented on post-mortem examination, though a culture from the liver produced a white growth on agar-agar that developed very slowly. Microscopical examination showed a short bacillus having the same dimensions as the organisms used in inoculating. September 25, inoculated a mouse, which died on the fifth day after inoculation. Examination showed micrococci and a short bacillus in the liver, which I failed to isolate.

Conclusions.—Probably a pathogenic and ænærobic organism in nature.

BACILLUS.—September 10, made Esmarsch tube of agar-agar from abscess produced by hypodermic injection of chloral hydrate under skin of mare affected with tetanus. September 12, numerous white growths had developed on the surface of media. Cover glass preparations of these growths under the microscope, with a one-twelfth oil immersion objective, showed an organism nearly circular in outline. Under the one-sixteenth, however, some of the germs appeared to be a little elongated and stained at polar ends. Inoculations were made in agar-agar and gelatin. September 13, a whitish, very nearly transparent, growth had developed at point

of inoculation in each media. September 14, growth extended over entire upper surface of agar-agar and gelatin, and clear white in color. Inoculated bouillon from agar-agar culture. September 15, bouillon quite turbid with a clear white sediment in bottom of tube. Microscopic examination of this one-day-old culture showed its spore formation to be taking place very actively. September 16, inoculated potato. September 17, a white stringy growth developed over the upper surface. Three mice and four rats were inoculated with this germ in the course of my studies; one of the mice only became affected, and died the fourth day after inoculation. Microscopical examination of agar-agar cultures from the liver and spleen showed among others a very short bacillus stained at the polar ends similar to the germ under observation. No further results were obtained from inoculations with this organism.

PINK BACILLUS.—September 1, inoculated gelatin from an abscess on horse's wither. September 2, a bright pink growth developed at point of inoculation. September 3, growth about one-fourth inch in diameter, and having a circular outline. Microscopical examination showed a bacillus about twice as long as the pyocyaneus. Inoculated gelatin in tube. By the 7th a similar growth to that on agar-agar had developed. Three mice were inoculated with this germ without any result.

Conclusions.—An ærobic organism and saphrophytic.

To summarize from the above experiments and observations *Bacillus pyocyaneus* proved to be the most malignant germ of those isolated, while the *Staphylococcus pyogenes aureus* was most often found, and in each case in originally closed abscesses, thus proving that the infection was from the blood, or from the tissue at seat of abscess.

In conclusion, I wish to express my thanks to Dr. W. B. Niles and Mrs. Niles for faithfully preparing water-colored sketches of the germ isolated, also of the growth of each germ on agar-agar, and to Prof. Pummel for the kindly services rendered in my laboratory work and the preparation of this thesis.

The paper was illustrated by cultures of the germ in agar-agar, as well as finely executed water-colored sketches.

SUMMARY OF EXPERIMENTS.—One of the unfavorable circumstances connected with this work is the immunity possessed by some mice and rats. While some would give affirmative results with a certain organism, others would not become affected by several inoculations. Of the house mouse and rat, the mouse seemed to possess the least immunity. Again, the results varied according to the manner of making the inoculation; while the organisms are placed well under the skin, septic poisoning is more liable to follow, and in some instances when *large* numbers are introduced the shock to the system will be so great that death results before any lesions are formed. Those inoculations made externally upon an abraded surface are more liable to produce suppuration at seat of inoculation, followed in some instances by death in three or four days.

One fact conclusively proven is that the suppuration following the inoculations is a direct result of the roll of the micro-organism therein introduced. As in each instance after inoculating with a certain germ, the same germ was obtained from the lesion produced by the inoculation. In some instances pure cultures of the inoculating organism were obtained from the spleen and liver after death, death in these cases being due to septic poisoning. From this fact it will be seen that as suppuration is an evidence of a diseased condition due to the roll of the micro organism, medical agents which would injure their vitality or destroy them would be indicated.

Of the germs isolated, the pyocyaneus seems to be the most malignant, producing death in from ten to twelve hours in mice and rats. This organism was found only in wounds infected from the atmosphere. The aureus, according to the accounts of others and also proven by my work, is the most often found when the infection comes from within (the blood or tissues). Of the non-pathogenic organisms isolated in the course of my experiments two specimens were obtained from closed abscesses, each being apparently pure; suggesting

that perhaps the abscess had originally resulted from infection with pathogenic organisms, and that these had been killed out by the non-pathogenic ones.

In connection with this work some experiments were made to determine the antiseptic, or rather the disinfecting, power of hydro-naphthol and peroxide of hydrogen. In the experiments made by Mr. McClannahan, now a graduate of the Veterinary Department of the Iowa Agricultural and Mechanical College, hydro-naphthol did not prove to have as strong disinfecting powers as has been supposed. The same general plan used by Dr. Abbott, of John Hopkins University, in his experiments with corrosive sublimate was followed by McClannahan. In the experiments with peroxide hydrogen the day-old cultures of the *S. P. aureus* bouillon were used. The peroxide was added to the cultures in such quantities that the organisms were in one, five, ten, twenty-five, fifty and one hundred per cent. solutions of that drug. Plate cultures were then made in one, five and ten minutes respectively. An examination on the third day showed many colonies of the aureus in the plates made from the one, five and ten per cent. solutions. It may be said, however, that those made after ten minutes showed less colonies than those made in one and five minutes. From the twenty-five, fifty and one hundred per cent. solutions plates were not made, but Esmarch roll tubes instead. The cultures being made after one and ten minutes, no growth developed in any except the one minute tube from the twenty-five per cent. solution. Agar-agar tubes were inoculated from all the different per cent. solutions of peroxide of hydrogen after thirty minutes, and only the one made from the one per cent. solution developed any growth. Hence it would seem that the longer H_2O_2 was in contact with the organism the more thorough was the disinfection, and that in a weak solution good results could not be expected.

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BRADYCARDIA IN THE HORSE AND DOG.

BY S. J. J. HARGER, V.M.D., Professor of Anatomy and Zootechnics, Veterinary Department University of Pennsylvania.

Bradycardia, as the name indicates, consists in a weakness of the heart's action, with a reduction of the frequency of its beats. This symptom sometimes accompanies the advanced stages of diseases of the brain, as encephalitis and immobility, from pressure on and consecutive disturbance of the centres in the floor of the fourth ventricle. In severe cases of icterus the toxic effects of the bile, like those of digitalis, produce the same result. Outside of these causes there are certain diseases, ætiologically often quite obscure, in which the bradycardia is so seldom seen that one could be tempted to treat it as an idiopathic condition.

Professor Frohner (Monatshefte für praktische Thierheilkunde) describes such a case of a nine-year-old bitch, with a

history that she had shown signs of vertigo, suddenly fell down and vomited. A closer examination revealed the remarkable fact that the heart was beating only twenty times per minute. The heart-beat could not be felt, nor heard on auscultation; temperature 37.7°C ., respiration 24, visible mucous membranes anæmic, great depression and weakness, general condition good. After subcutaneous injections of atropia for two days to stimulate the heart, the bitch died. A post-mortem revealed a dilatation of the bulb of the aorta above the semilunar valves, the diameter of a silver dollar; the intima showed a chronic endarteritis. The other organs, including the brain, were normal.

Previous to this, two cases had been reported.

Nordheim (*Zeitschrift für Veterinärkunde*, 1890 S. 275) mentions a horse with only fourteen heart-beats per minute. The animal likewise fell down several times during the day, rising each time after a lapse of five minutes. During the attack a decided nervous pulse was noticed; the first heart-sound was loud and metallic, the second weak and imperceptible; temperature 38.1°C .; locomotion weak and staggering; emaciation rapid. During the following days the pulse was 15–16, and at the end of eight weeks the horse died during an attack. A post-mortem revealed a dilatation of the right auriculo-ventricular opening sufficiently large to admit two fists.

Vogel describes a similar case in the horse, which sometimes stopped during his work, and presented symptoms of vertigo. Examinations of the horse showed a pulse of 15–19 per minute. On auscultation only one heart-sound was audible; respiration accelerated; appetite good; great emaciation followed. These attacks increased in frequency and severity even during walking, and the animal was finally destroyed. Post mortem: Hypertrophy of the left side of the heart.

In each of these three cases the slowness of the heart-beats was due to an alteration in the heart; in the first, aneurism of the aorta; in the second, inefficiency of the tricuspid valve; and in the third, left side's hypertrophy. These alterations, as would be expected, presented symptoms other than a slow

pulse. It is difficult to say whether the slow pulse was a result of weakness of the heart-muscle, or of irritation of the pneumogastric nerve terminals. From experience in the human being, in whom bradycardia is a symptom of several cardiac diseases, especially fatty degeneration, aortic and mitral stenosis, the first theory could be accepted. As a slow pulse is attributable not only to the various heart diseases but also to some diseases and morbid growths of the brain, jaundice, toxic drugs, anæmia and hæmorrhage, it is only in exceptional conditions that it is of diagnostic value. Aside from other symptoms with which it is associated, it has nothing characteristic, and, being common to many affections of the heart, it cannot be regarded as a key to diseases of this organ.

The treatment of bradycardia, as the three preceding cases indicate, meets with but little success. The prognosis must therefore be very grave. Medicinal agents, such as digitalis, alcohol, carbonate of ammonia, atropia and hyocine, are indicated.

ACUTE INDIGESTION.

BY DR. JAMES CARNITE., V.S.

(A paper read before the New York State Veterinary Medical Society).

In this paper I will attempt to present for your consideration a few practical ideas on this dreaded disease as I have observed them during my practice. I think I am safe in my estimate when I say that it is the cause of the death of more horses than all other diseases combined. I will not discuss the pathology, accepting the opinion as laid down by different authors.

The most prolific cause is over-feeding and giving water after a hearty meal. If this is continued deranged digestion is the result, followed by an acute attack. I do not believe that any one particular kind of grain is more liable to produce this disease than another. If the stomach be in a healthy condition any kind of sound grain fed in regular amount will do no harm.

I have divided the symptoms into primary and acute. The primary symptoms are an irregular appetite, sweating upon slight exertion, then the bowels relax, passing semi-digested food covered with slime, accompanied with a very fetid odor. All this may continue for some time previous to the acute attack. The acute symptoms will depend upon the severity of the attack and the age of the patient. If the stomach be distended with gas the pain will be most intense, sweats bedew the body, the horse lies down quickly, rolls, and endeavors to balance on his back, which gives ease to the inflated stomach; the pulse and respiration are elevated; these are the symptoms in the young animal.

In other cases the bowels are highly inflated with gases, with slight expression of pain, the horse maintaining the standing position most of the time. We have as well in most cases the symptoms that usually accompany this disease.

After many trials and the loss of several patients I was forced to abandon the old orthodox treatment, and I set about to find a more efficient method, and consider I have made a great improvement. I have denounced the purgative ball, linseed oil, turpentine, and alkaline treatment, with injection pump included, for many reasons that I might explain. Concluding the disease was due to an acid condition of the stomach, causing a ferment and generation of gases, I set about to find a quick and efficient remedy just to allay pain, and have found nothing to equal chloroform. To stop ferment and expel gases I have found nothing that equals dilute carbolic acid. Usually I have found that cases yield to one dose of the above remedies.

PARALYSIS.

BY DR. J. M. CHASE., V.S.

(A paper read before the New York State Veterinary Medical Society.)

Paralysis is a partial or complete cessation of muscular contraction caused by diminution or complete loss of the conducting power, or stimulation of the motor nerves. Par-

alysis may be divided into partial or general; and partial into two classes, hemiplegia and paraplegia, and when in small parts of the body, such as tail or face, might come under the head of partial or local paralysis.

As general paralysis cannot occur without producing immediate death it will not be necessary to make any deductions in regard to it. But with hemiplegia and paraplegia the practitioner often comes in contact, and it is principally with these that I shall have to deal in this paper. Hemiplegia or paralysis of one side, or half the body, is not met with in our patients to the extent that it is in the human family, because our patients are not as subject to brain disorders and mental strain and activity.

The causes of hemiplegia are principally tumors in brain, particularly of the lateral ventricles, softening of one hemisphere of the cerebrum, pressure from extravasated blood clots or thrombi, fracture of cranium, but generally is the result of emboli obstructing one or more blood vessels in the brain. When it is the result of a disease of the brain which has existed prior to the paralysis, particularly if of an inflammatory character, it seldom attacks the whole of one side of the body, but is confined to one side of head or neck, or one limb, and may in such cases pass off in a short time. Sensibility in most cases is not impaired, but in some cases the sensory as well as motor nerves are involved.

Having given the principal causes in our subjects we will direct your attention to the symptoms and treatment. In hemiplegia the attack may be very sudden, the animal falling down powerless to move one side of the body. The side that is affected presents the following conditions: The ear-part of lips will be relaxed, tongue may hang out of mouth, tail curved around sideways, often accompanied by inability to swallow, together with a constant flow of urine as fast as secreted. The sensibility is usually lost, as well as motion, but not always. Coldness of the limbs affected is a usual sign, though they may be warmer than natural. The prognosis in severe cases is unfavorable, but in slight attacks, when the animal remains in a standing position, the recovery is quite probable under proper treatment.

Next we come to another form of paralysis of the posterior parts of the body. Under this head of paraplegia come spinal meningitis and myelitis. Paralysis of the posterior extremities is usually due to some injury or inflammation affecting the spinal cord. Symptoms of paraplegia are easily recognized by a weakness and imperfect control of the hind legs, a powerless tail, and the passage of urine and fæces is done without any voluntary action, showing a loss of nerve force in the parts posterior to the seat of injury or disease. There are also likely to form large ulcers and sores on hips and sides of body, which weaken the animal very rapidly and hasten final dissolution.

Next I shall give a short account of the causes, symptoms, pathology and treatment of spinal meningitis as it occurs in our patients. It is due to irritant properties of blood poisons, exhaustion or exposure, spinal concussions or injuries of any kind to the spine, tumors, caries of the vertebræ, rheumatism, and it may be in the form of an epidemic. The usual symptoms are ushered in by a chill, a rise of temperature, general weakness and a disposition to be uneasy and shift position of legs. Soon a painful convulsive twitching of the muscles sets in, followed by muscular rigidity along the spine, and upon attempting to move the animal stiffness and great pain will be evinced. Retention or incontinence of urine and often sexual excitement is present.

The characteristic symptoms of spinal meningitis are a high fever and spinal symptoms in the early stages of the disease, which usually become chronic after a time.

There will be an effusion of serum between the membranes of the cord, which becomes plastic and adheres to the pia mater, which serves to maintain a state of paralysis for a long time after the acute symptoms have passed off. Finally, atrophy, softening, and even abscess, may develop within the cord.

Bags filled with ice should be applied along the spine, to be followed later with strong blisters. The fever should be controlled with antifebrine, aconite, or Norwood's tincture of *veratrum viridi*, in twenty-minim doses every hour, together with dram doses of extract of belladonna every six hours

until the pupils of the eyes become dilated. If there is a great amount of pain, hypodermic injections of morphine should be given, to relieve the intense suffering which marks spinal diseases. The animal should be kept as quiet as possible, and free from excitement. The urine when there is retention must be drawn every five or six hours. Placing in slings is often beneficial, and care must be taken to empty the bladder before attempting to raise the animal with the slings, as the bladder when very much distended is apt to be ruptured on applying so much force to the abdominal walls. Iodide of potassium, nux vomica, and the iodide of iron are indicated in the convalescent stages, and electricity may be advantageously used to the affected muscles.

Myelitis, inflammation of the substance of the cord, is a disease not usual in our patients, except as a sequel of spinal meningitis, and is to be treated in the same way as this disease, but it is not usual for a recovery to be effected. Under this head of paralysis comes a number of local lesions and affections of the nerves, such as locomotor ataxia, where there is not a co-ordination of movements of the muscles of one or more limbs. When confined to the posterior limbs it may be classed as a form of paraplegia, and is to be treated as such.

Facial paralysis is met with in some cases, and is manifested by pendulous lips, flaccid cheeks, and inability to grasp food; this is best treated by a sharp blister over seat of trouble.

Paralysis of the intestines is a disease which the practitioner may meet with, and can only be diagnosed by negative symptoms; as when no results from cathartics can be obtained, and there is an absence of any signs of impaction or indigestion. It may be caused by sudden checking of perspiration and to brain affections, or to reflex paralysis.

Paralysis of the bladder is met with, and is to be decided upon much in the same way as that of intestines, by negative rather than positive signs.

Amaurosis is a disease often met with, and one with which the practitioner ought to be very familiar, particularly in examination as to soundness. The eye looks nat-

ural on casual examination, but when examined carefully the affection is easily discovered. Inasmuch as no medical treatment can be applied to the optic nerve, amaurosis may be properly classed among the forms of paralysis that are not amenable to treatment.

In summing up the treatment of paralysis, the general treatment consists in cold applications to spine, with febrifuges to counteract the febrile symptoms, and in convalescent stage blisters to spine, and nux vomica and iodide of potassium.

NOTES ON PARASITES.

BY C. W. STILES, Ph.D.

A WORD IN REGARD TO DR. FRANCIS' *DISTOMUM TEXANICUM*.

In the October Bulletin (Number 18) of the Texas Agricultural Station, Dr. Francis describes a liver-fluke, which he supposes to be new, under the name *D. Texanicum*. This parasite, however, has been known for some time to the Bureau of Animal Industry, and one of the members of the Bureau (Dr. Hassall) described the same in the July number of this journal (1891) under the name *Fasciola carnosus*. Upon noticing that the specific name *carnosus* is preoccupied, Dr. Hassall changed the name to *F. Americana* (this journal, September, 1891). As the species *F. Americana* Hassall and *D. Texanicum* Francis are without doubt the one and the same species, Dr. Hassall's specific name must of course be adopted in preference to the specific name given by Dr. Francis. The generic name, however, should be *Distomum*, and the animal in this case would be called *D. Americanum*.

But another parasite must also here be taken into consideration, i. e. *D. magnum* Bassi, 1875, which was described by Prof. Bassi some years ago in Italy, and since that time has, by most authors, been improperly considered identical with *D. hepaticum*. *D. Americanum* Hassall and *D. magnum* Bassi are certainly very similar and it is more than probable that they are identical, but owing to the incomplete description Bassi gave of his species, it is exceedingly difficult to pro-

nounce a decisive judgment upon the matter if we rely upon the description alone. The figures which Bassi gives, however, speak strongly for the view that *D. magnum* and *D. Americanum* are the same species. I should hesitate somewhat to express myself in favor of their identity were it not for the fact that Leuckart has written to us that he also considers the species identical and that Blanchard, in a recent letter to me, refers to this parasite as *D. magnum*. Both Leuckart and Blanchard, as well as myself, have examined *D. Americanum*, and although Blanchard already knew my views upon this subject, Leuckart did not, but came to his conclusion entirely independent of me. Thus, according to the views of Leuckart, Blanchard and myself, the correct name of the parasite is *D. magnum* Bassi, while *F. carnosus* Hassall, *F. Americana* Hassall and *D. Texanicum* Francis are synonyms of *D. magnum*. Should it, however, be proven that Leuckart, Blanchard and I are wrong in regard to the identity of *D. Americanum* and *D. magnum*, then the name *D. Americanum* Hassall (Sept. 1891), must by all means, as stated above, take priority over the name *D. Texanicum* Francis (Oct. 1891) since the former antedates the latter by one month in publication.

To Dr. Hassall is due the credit of insisting upon a specific distinction between *D. hepaticum* and the large liver-fluke found in American cattle, and this is not lessened in the slightest, even if we accept *D. magnum* as the proper specific name of the parasites.

BUREAU OF ANIMAL INDUSTRY, U. S. DEPT OF AGRICULTURE, }
WASHINGTON, D. C., Jan. 30, 1892. }

SOME INTERESTING POST-MORTEMES.

BY A. G. ALVERSON, V.S.

(A Paper read at Meeting of Illinois State Veterinary Medical Association, Feb. 17, 1892)

No. 1. Was called one evening to see an animal belonging to a horse shipper and which had come into his possession on the day previous, consequently all past history of the case was for the time unknown. The animal, a large gray geld-

ing, was showing some slight pain, evidenced by kicking or stamping with the hind feet and switching the tail. Pulse, respiration and temperature nearly normal.

Showed a dirty, gummy appearance of the hair down the back part of fore legs and along the median line of belly, except for a foot or so forward from the sheath, to which point the hair was nearly gone, and the skin somewhat excoriated. This led to an examination of the penis, which was swollen or enlarged at lower end, and showed soreness around the urethral opening.

Then examined the horse per rectum and found the bladder did not contain any great amount of urine.

Diagnosed some obstruction of urethra, which could only be permanently relieved by operation. Saw no urgent necessity for temporary relief by use of catheter, with some urine dribbling away all the time and the bladder not distended.

The owner thought he would ship the horse as he was and take whatever he could get. The next morning the animal was brought to the infirmary in a dying condition.

However, tried to pass the catheter and found the urethra plugged with a deposit of lime salts (sabulous deposit). Removed considerable of it, as far as in reach, then passed a metal sound to pave the way, so to speak, and then succeeded in passing catheter, but no urine came. Animal died in a short time and autopsy was made the next morning.

Nothing abnormal until reaching urinary organs. Up a little more than a finger's length in the urethra was a large mass of the same deposit. Bladder nearly black, had numerous adhesions to the pelvis and pelvic viscera, contained a hole two or three inches in circumference, and internally was studded with the sabulous deposit.

No. 2. Called morning of October 14, 1891. Found patient, a two-year-old grade draft gelding, standing in a box stall, showing marked symptoms of depression.

Temperature hardly up to normal, pulse about forty per minute, head held low, eyes dull, and breathing deep and slow.

A very foetid odor came from the mouth. Diagnosed as brain trouble, probably caused by indigestion.

Animal was bled, given a dose of oleum lini and left soda salicylate and stimulants, with another dose of oil, to be given in the evening. Died the next morning and made post-mortem in afternoon.

Found stomach distended, with food in a semi-dry condition.

Coeliac axis was the seat of a verminous aneurism about the size of a man's head, and several portions of the bowels were adherent to its surface, including the duodenum, which at point of adhesion was less than half its natural capacity. This seemed to me to be the cause of the stomach and brain symptoms, by not allowing the ingesta to pass on. The bowels were without inflammation throughout.

No. 3. On the morning of May 10, 1891, I was called some eight miles in the country to see a sick mare, arriving about eight o'clock. Patient was a four-year-old gray mare, with a healthy foal a few weeks old by her side.

History given was that the young horses on the place had all been more or less affected with strangles. About six weeks before time of visit, this mare was not very well, but neither swelled in any perceptible place nor discharged any pus from the nose. She had not thriven well since that time, although had given birth to the healthy foal in meantime.

At two or three times she had shown slight attacks of colic, which soon passed off without medication. This attack came on about eleven o'clock in the morning the day previous, and she had been very uneasy since early in the evening.

Examination showed a scarcely perceptible pulse, temperature 102° or slightly higher, anxious expression, and slight tremors over the body, particularly noticeable at the shoulders. Head occasionally extended and upper lip turned up. The breath was sour and foul-smelling, and very little if any peristaltic action could be detected. Diagnosed inflammation of the stomach and bowels.

Gave sodas, stimulants and fl. ext. canibus indica, but the animal grew rapidly worse and died about twelve hours from the time this attack came on. Post-mortem made immediately after death.

First found a lot of water and undigested food in the ab-

dominal cavity, which came from a large rupture of the stomach. Farther examination showed a mesenteric abscess larger than a man's head, containing quite a quantity of creamy pus. The coats of both the large and small intestines were adherent to the surface of abscess. Here was the primary cause for the condition of stomach and bowels.

No. 4. In May or June of last year went with Dr. Williams, my former partner, to see the subject of following article. The cow had at that time been ailing for several months, and was found lying in the stable yard, looking emaciated and breathing laboriously. Was with some difficulty persuaded to stand.

Poor, hide bound, enlarged in joints, and showing symptoms which at once led to an examination of the lungs. Both were dull in patches, aggregating more than half the surface, non-resonant on percussion and devoid of crepitation. Other parts were as resonant as natural.

Could get no history of contagion, but we considered the case must be one of tuberculosis and gave that as an opinion, advising destruction, which was not done for two or three weeks.

In the meantime saw the cow again, and found her to be growing slowly worse, which we were informed she did until killed.

Conducted the autopsy soon after death. On reaching the lungs all idea of tuberculosis was at once exploded. Substance of the lungs was more like the consistency of kidney, lobulated, but the different parts showed great variance of density. Some entirely devoid of air, some containing a little, while other parts had been semi-active until death. Looked farther for a cause of this condition and found the bicuspid valves of the left auriculo-ventricular opening were diseased.

The rest of heart looked well enough, but the valves bore a honeycombed appearance, and must have been incapable of performing their functions.

Was not the forcing back of the blood from the heart, through the pulmonary veins, the cause of the condition of the lungs?

REPORTS OF CASES.

RETENTION OF A DEAD FŒTUS BY A COW.

BY D. P. FRAME, Colorado Springs, Col.

The following case being of rare occurrence I deem it of sufficient interest to report for the benefit of the profession.

On November 28, 1891, while attending some stock at the ranch of Messrs. Erick and White near this city, I was requested to examine one of their finest Holstein cows, to determine whether or not she was in calf; she being then two months past her time and showing no signs of calving. An examination was made per rectum, but I was unable to decide positively whether there was a foetus there or not, as I could feel no movement, nor could I make out any definite form of a foetus, though there appeared to be a hard mass in the uterus.

The cow was in perfect health and good condition, but had made no preparation for calving at the usual time, nor did she come in heat.

On January 12, 1892, I was again requested to examine this cow, as she showed no signs of calving, but was steadily improving in condition; and being valuable as a breeder, her owners were desirous of having her services if possible.

On the above date I made an examination *per vagina*, and found the os cervix lying on the floor of the vagina, but very slightly open and as hard and unyielding as the mouth of a jug. I could introduce my fore finger, but could not dilate the cervix sufficiently to get two fingers in. Nothing could be felt inside the uterus.

There appeared to be only a small quantity of a viscid mucus in the cervix. I placed a tampon of sponge saturated with ext. belladonna in the cervix, but after an hour was unable to dilate the organ the least.

Early on the morning of the 15th I was sent for to attend this cow. On arrival at the ranch the foreman informed me that she had been straining a little at times since my examination on Tuesday. On going to her stall I found she had only a moment before aborted a dead foetus.

On examination the foetus was found entirely enveloped by the membranes, and on opening these, the *liquor amni* was found to be quite absorbed, and the membranes, which were very pale, thin, friable and quite structureless, fitted very closely to the foetus. The foetus, with the exception of absorption of the eyes, was not decomposed at all. It was somewhat mummified, being only slightly moist from its contact with the membranes. From its size it appeared to be about three and a half to four months old.

On examining the cow, the os cervix was found fairly dilated, but still appeared to be thick; the uterus was somewhat contracted.

A slight discharge of foetid and disorganized pus and mucus was discharged from the uterus, though but little liquid of any kind, and no blood, had been expelled with the foetus.

The uterus was at once thoroughly washed out with two or three gallons of a warm solution of potassæ permanganate. The cow appeared not to suffer the least shock from this abortion, in fact, so far as could be observed she was in perfect health.

Much care is taken on this ranch to keep an accurate record of dates of breeding of cows, and by reference to this record, this cow was served by the bull the last time on December 15th, 1890, just thirteen months prior to this abortion. There was no possibility of her having been served accidentally during the interim, hence, assuming that this foetus was four months old, she must have been carrying it dead for nine months, without any apparent injury to her health. This abortion was no doubt caused directly by my irritation of the cervix on the 12th, three days prior, but had not this occurred it is quite uncertain how long she might have carried this foetus.

This cow had not at any time shown signs of calving, having been dry for some time, though for a couple of weeks about the latter part of October, 1891, she had a slight discharge of a glary mucous per vagina. She is now eleven years old, and has always been a regular breeder.

Fleming in his "Veterinary Obstetrics," pages 193-195, records several cases of "foetal retention," but in most if not all of these cases the animals died or were destroyed.

CHRONIC ABSCESS OF THE GUTTURAL POUCH IN A YOUNG COLT.

BY R. T. WHITTLESEY, D.V.S., Los Angeles, Cal.

The subject was a trotting-bred colt, about five months old, and on a first inspection had the appearance of suffering from a most aggravated case of strangles. There was an enlargement, extending from ear to ear, and making a most enormous swelling. There was no discharge from the nose, no stertorous breathing, and the animal ate and drank well, was fat, and seemed to suffer but little inconvenience from this great muff-like swelling. There was no soreness on pressure, but it was filled with air, which could be pressed out, making a squeaking sound when it escaped. When nearly emptied of the air, fluid could be detected at the bottom of the cavity.

The history was that when a month old the colt had a small swelling on the right side, which had been overlooked, but continued to grow. It had been punctured several times, followed by the escape of a whitish, milky-looking fluid.

The case was placed in my hands, to be treated at my discretion.

A longitudinal incision was made in the most dependent part of the tumor, and was followed by the escape of a small quantity of white fluid, similar to that which was obtained on previous occasions.

On digital exploration the cavity of the right guttural pouch was found much thickened, and could have contained between three or four quarts of pus. The condition of the pharyngeal opening of the pouch was sufficient to explain the peculiar regurgitating sound caused by the escaping air when pressure was applied upon the swelling.

The case being considered beyond remedy, the patient was destroyed.

SULPHATE OF MAGNESIA AN ANTIDOTE FOR CARBOLIC ACID.

BY J. STERLING, V.S., New York City.

An imported two-and-a-half-year Leonberger dog was suffering with skin disease, and by advice of a dog-doctor was treated with carbolic soap and carbolized water.

December 5 the dog received his first application, being well rubbed with the carbolic soap, which was allowed to remain on him for an hour, when he was washed with a 3 per cent. solution of the carbolized water. In the afternoon of the same day he refused his food, was taken with violent vomiting, exhibiting symptoms of severe colic and diarrhœa. The temperature, when the dog was seen later in the day, was $96\frac{1}{2}$; the pulse imperceptible; severe dyspnœa; the urine highly colored and brown; and the hinder extremities paralyzed. My diagnosis was carbolismus, produced by the absorption of carbolic acid in the system.

The treatment consisted in the administration of three five gramme doses of sulphate of magnesia every half hour, with small doses of ether to keep him quiet. He passed a comparatively quiet night, and recovered after four days of careful nursing and diet without further treatment.

The chemical changes which must have resulted from the union of the sulphate of magnesia $MgSO_4$ and the carbolic acid C_6H_5OH , can be represented by the following formula: $C_6H_5OH + MgSO_4 = C_6H_5OHSO_3 + MgO$, the carbolic acid and the sulphate being changed into sulpho-carbolic and oxide of magnesia.

OVARIOTOMY IN THE MARE.

BY WM. H. RIDGE, V.M.D., and SIMON J. J. HARGER, V.M.D.

The patient, a sorrel mare about nine years old, was owned by a Philadelphia gentleman from a colt to about six years of age, during which time she was gentle and quiet. On being harnessed she now began to show signs of kicking—switching the tail, urinating when touched by the traces, and squealing—but did not kick until when a seven-year-old. She was

at this time served by the stallion, and during gestation and until the foal was weaned (August, 1891), was quiet. After the foal was weaned, the attendant could scarcely harness her; she kicked viciously, and œstrum was constant. Six months before being served by the stallion, I prescribed potass. brom. in ounce doses until a pound was taken; after an interval of two weeks, the same was repeated without improvement. In October, owner number 3, who had bought her at public sale, could not work her. I ordered her to be served again by the stallion, which was done four times in one week, and so aggravated the symptoms that she could not be groomed. The owner brought her to me to have her spayed, and after explaining the risks to him, he decided to have the operation done. Not wishing to assume the whole responsibility and not having the proper instruments, I asked Dr. Harger to assist me, which he kindly did, performing the operation himself.

The mare kicked so furiously when touched that it was impossible to do the operation standing up or even in the stocks, and we had to cast her. We decided upon the vaginal operation, using an improvised vaginal dilator and chain ecraseur. The displacement of the abdominal viscera because of the recumbent position made the operation laborious, and the ovaries had to be cut off within the peritoneal cavity. The hemorrhage was insignificant; temperature never above $101\frac{1}{5}^{\circ}$ F.; appetite perfectly normal; discharged from the University Veterinary Hospital on the tenth day after the operation. She was perfectly quiet, could be thoroughly groomed, showed a disposition to lie down, and had a slight vaginal discharge during the following two weeks, when the old symptoms returned, though not to the same degree.

At the present writing the animal is in perfect health and gives but little trouble in harnessing to the cart to which she has been working every day. She is improving daily, so as to lead us to believe that a cure will eventually be effected. The left ovary was enlarged and indurated, and the histological changes, which unfortunately have not yet been determined, will be reported at a future date.

ACTINOMYKOSIS.

BY DRs. T. FAUST & SON, Poughkeepsie, N. Y.

(Extracts from records in note-book.)

CASE 1 and 2. [On July 20th, 1886, we were called to examine two heifers owned by G. A. B., with the following history: About four months previous there was noticed a slight swelling on the lower jaw, which gradually increased in size until it interfered with the halter.

The sire of these heifers, Clover No. 2, was killed by my orders six months previous for actinomykosis in its worst form. On examination we found tumor on lower jaws, which were slightly movable. We advised removal of same, which we did in the following manner: Had animal cast and securely fastened, the head to the floor. With the scalpel made an incision through the skin about four inches long, then carefully dissected the tumor from the connective tissue, using the handle as much as possible; after removing all diseased tissue had wound washed out with bichloride of mercury 1-200, then filled cavity with oakum and brought edges of wound together with stitches. On the second day removed dressing; found wound in healthy condition, with very little discharge; continued bichloride of mercury, 1-1000, every other day. Heifer recovered entirely in four weeks.

About two months after the operation, on one of my regular visits to this farm, we were told that the two attendants were very sick and the physicians failed to diagnose their ailments. We called on these young men and received the following history:

About ten days after the operation on the heifers they were taken sick; pains all over the body, bones ached. One of the young men, C. P., had a swelling on the right side of his neck, which gradually grew larger, it being hard and painful. The other, F. W., had a swelling at the umbilicus which grew to the size of a hat and discharged a yellowish pus. Our suspicion was at once aroused that the boys had been affected with actinomykosis, which it proved to be; they were treated for such and recovered in about five weeks.

The infection was caused by scratching the neck and umbilicus with the infected hands while we were operating. It being a very warm day, they were scantily clothed; the one F. W. had on only overalls and blouse.

CASE 3. On January 30th, 1891, we were called to the farm of T. H. B.; found cow with actinomykosis; advised operation, which we did in the same manner as in case 1 and 2, except before operating we washed the parts well with bichloride of mercury, 1-1000. The wound healed up in three weeks.

CASE 4. On April 1st, 1891, we operated on cow, owned by Mr. H., for actinomykosis in the same way as in case 3. On removing the diseased tissue the bone was found to be rough and slightly honeycombed; we scraped the bone and used same dressing as in previous case; entirely healed in six weeks.

CASE 5. On August 10th we operated on cow, owned by Mr. S., for actinomykosis same as in previous cases; dressed with bichloride of mercury for first three days, followed by creolin, 1-50, with good results; wound healed in three weeks.

CASE 6. On January 11, 1892, we were called to see a horse owned by M. B., with following history: In July '91, they noticed a small swelling on lower jaw, which was caused, as they supposed, by a blow from the hired man. It gradually grew, pushing the incisor teeth in different directions. When we were called it was so large the horse could hardly eat; tongue hanging out of mouth—he could not draw it back. We diagnosed it as actinomykosis and advised him to destroy animal, which we did. The specimen we sent to the American Veterinary College.

In cases 1, 2, 3, 4 and 5, we examined parts microscopically, and found the fungi of actinomykosis.

AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT.

DOUBLE INTRA-SCROTAL CHAMPIGNON—SUCCESSFUL OPERATION.

BY E. B. AOKERMAN, D.V.S., House Surgeon.

The patient was a large chestnut gelding, used for heavy

work, which was brought to the hospital with a large swelling in the inguinal region. The owner said it interfered with his work and made him a little ugly to handle, clean, etc.

Upon examination I found a large double intra-scrotal champignon, the right one much larger than the left, and containing two or three small tracts, the largest of which was discharging a thin, black-looking pus.

After advising the owners of the dangers, which they were willing to risk, it was decided to operate.

The animal was prepared and secured for the operation the same as for castration; the scrotum thoroughly washed with a 5 per cent. solution of creoline, followed by a solution of Hg. Cl₂, one to one thousand.

An incision was first made over the left side, and the smaller one dissected out and ligated. Then the right one was exposed and the cord dissected as far up as possible; a strong seton passed through it allowed to hold it and pull it out in proper direction to carry on the dissection of the cord.

Both champignons were then removed with an ecraseur, the larger being amputated first.

The right one weighed twelve and one-half ounces, and the smaller two and one-half. There was only a slight hæmorrhage as a result of the operation.

The wound was then thoroughly washed with same solutions of Hg. Cl₂, and the animal allowed to get up.

The scrotum was not much swollen the following day, but on the third day quite a large infiltration appeared, and then a considerable discharge of pus, filled with small sloughs, began to take place.

By the fourth day the temperature only reached 101 $\frac{4}{5}$ deg. F. The animal walked very stiff, almost characteristic of tetanus. The scrotum was swollen very large, and there was a profuse discharge of pus.

The wounds were injected and the scrotum washed twice a day with antiseptic solution (creoline), and on the fifth day we began to use hot fomentations to hurry the sloughing process, the discharge of pus, and relieve the swelling of the parts.

On the sixth day the temperature began to increase, and about the seventh day reached 104 deg. F., which was relieved by quinine, and began to subside down to 101, and fluctuated between 101 and 102 deg. F. until about the tenth day.

The scrotal swelling having continued to increase, diuretics were administered, the parts freely scarified, and the hot fomentations kept up.

The scarification gave escape to a large flow of serosity, and the swelling then began to subside, while the discharge rapidly grew less. The cavity was filling up nicely.

About the tenth day the horse was put on regular walking exercise out of town. He was sent home, and when last heard from was doing very nicely.

SARCOMA OF THE NASAL SINUSES.

BY E. J. NESBITT.

The subject of this report was a bay mare, presented by Dr. R. Buckley of this city at the clinic held November 4, 1891, with the following history:

She had been shown to him about two months before, and upon examination he came to the conclusion that the discharge from her nose was due to chronic nasal catarrh, with a possible collection of pus in the sinuses. Trephining was recommended, but the owner did not care to have any operation done, so the animal was put under mineral tonics and hot fumigations.

A few days before the admission of the patient to the hospital she was again brought to the practitioner, with the history that some one had seen her and pronounced her afflicted with glanders. This aroused his suspicions, and a more careful examination was made, with the same conclusions as at the first.

Wishing to be more positive, he made arrangements to have her examined at the clinic, when the following notes were taken: Temperature, pulse and respiration normal; general condition fair; a thin, watery, pearly-colored dis-

charge from left nostril; teeth were in good condition; no enlarged glands in the intermaxillary space. There was no enlargement over the sinuses, but, on percussion over the left side, dullness was heard. A diagnosis of pus in the sinuses was then made, and the operation of trephining was recommended.

The mare was kept two or three days before being operated upon, and in that time there was a perceptible increase in the size of the face over the sinuses of the left side, although there was no increase in the amount of the discharge. This aroused suspicion, because it was not likely that the simple accumulation of pus, that had an avenue of escape, would cause such a rapid and well marked enlargement. Because of this fact it was surmised that a tumor of some kind was the cause of all the trouble.

The mare was prepared in the usual way, by having nothing to eat for breakfast, and one ounce of chloral hydrate. She was then cast and secured. A V-shaped incision was made over the supermaxillary sinuse, the skin dissected back and periosteum treated in the same way; then by the trephine a circular piece of bone was removed. By doing this another exit for the escape of the contents was made. Here again we were led to believe, more and more, that a tumor existed instead of a simple collection of pus, for as the bone was removed only a very small quantity of pus escaped, and then, by introducing the finger, our diagnosis was confirmed, for then we could feel the thickened mucus membrane lining the cavity, and here and there scattered over the membrane we could feel more or less large granulations. We at once saw that it would be useless to continue to treat the animal, for how could we successfully remove those granulations which were undoubtedly the cause of all the trouble? The owner was informed as to her condition, and when told that we could do nothing for her, he gave his consent to have her destroyed. This was done and the head removed. After carefully chiselling away the external wall of the supermaxillary sinuse we could thoroughly examine the contents. Some of the granulations were as small as a pin's head, and

one nearly the size of a baseball occupied nearly the whole cavity. This large granulation, or tumor, was smooth externally, although its surface was somewhat irregular. It was attached to the membrane by quite a large base; yielded but little to the pressure of the finger; it was of a light pinkish color. The same thickened condition of the membrane of the nasal sinuse existed, with, however, no granulations.

A microscopical examination of the membrane and tumor was made and was found to be of a sarcomatous nature of the large cell variety. This is indeed a very interesting condition, as it may be one of the common causes of such affections. We may at least suspect it when we have a discharge of a pearly-white color, which may not be very abundant, and principally when we have a rapid enlargement of the bones covering the sinuses.

EXTRACTS FROM FOREIGN JOURNALS.

ABSCCESS OF THE BREAST.

Translated by R. MIDDLETON, A.M., D.V.S., Philadelphia, Pa.

This embraces two varieties, to wit: superficial or external—acne, and deep or internal, which includes the ordinary abscess and the so-called “cold” abscess. It is only the latter variety that is spoken of in this article, and which alone merits the term. This has its situation either in or beneath the mastoido-humeralis, anterior to and somewhat above the scapulo-humeral articulation. The swelling varies in size from a hen’s egg to a cocoanut, and at first is usually painless. It is characteristic of this formation that it possesses pus in its center, and despite the first impression is never sharply circumscribed in its extent. The development may or may not be rapid; for instance, we have observed such an abscess, the size of one’s fist, to remain on a coach horse throughout a whole year, without remarking increase in its size. After the appearance of the swelling the animal was used for equestrian purposes; in this way can we account possibly for the chronic course of same.

That these abscesses are occasioned by pressure of the collar there can be no doubt; they are indigenous to draught horses, and incidental to their occupation. It may be of historical interest to note Hertwig's earlier description of the condition as being induced by inflamed testicles.

Since the pus always contains cocci, we are justified in assuming them to be deposited by the lymphatic system in the glands of this locality. Prognosis is favorable, and if of ancient formation the course is slow; small swellings, which are scarcely visible, are more tedious than those of larger dimensions. In the latter a cure is effected by dispersion, but in the former the *ultima ratio* consists in operative removal. In many text books cataplasms and salves are recommended; we admit the possibility of removal through these medicines, but have ourselves never achieved the desired end by them. By these agents we have succeeded in softening the enlargement and increasing the suppurative process in eight to ten days; in other cases, however, warm fomentations, salves and parenchymatous injections, when continually applied through weeks and months, have yielded no good. From our experience we have abandoned the above methods, and now resort to the bistoury:

The swelling, irrespective of consistence or circumference, is incised. Cases are sometimes met in which this procedure fails; in such cases extirpation offers the only means of ultimate eradication. Dr. Schmidt has recently recommended the injection of a concentrated sod. chloride solution. From this treatment the abscess becomes exceedingly painful and suppurates. Many colleagues in our association have applied the Schmidt treatment with good results, though we cannot report the same satisfactory end. Schmidt himself admits that in old cases the result is uncertain. Extermination is *per se* not very difficult, but from the dangerous proximity of the carotid and jugular a degree of skill and care are demanded. We were much surprised to read that Stockfleth recommended the performance upon animals in the standing position.

As in all considerable operation we first chloroform the patient—by this opportunity apropos allow me to say that

few practitioners appreciate the advantage of operating under narcosis. After severing the skin over the abscess, in the course of the larger vessels, the same is dissected back, and the tumor fastened by means of "tenaculum" forceps, which is much handier than inserting tape through the tumor. In avoiding the vessels one may be guided more by the sense of touch than sight. Hemorrhages in this locality must not be underestimated, since the sclerotic character of the tissue renders ligation almost impossible. In order to remove any portions of the indurated tissue which may have escaped the operation, we generally insert a tuft of absorbent cotton when sewing the wound. In from fourteen days to four weeks the cavity of the wound is filled with granulating tissue and a cicatrix of sufficient age to permit the subject to work.—*Berlin. Woch.*

PRACTICAL OBSERVATIONS.

BY THE SAME.

At the last meeting of the Veterinary Association of Brandenburg, Dr. Lehman offered for consideration a concretion of a stony nature which he had found in the stomach of a horse. This was of especial interest, not alone from its size, but from the rarity of the occurrence, only three such cases being on record. This body measured about three and one-half inches in transverse diameter, was of oval form, and possessed a number of furrows upon its exterior which were in their resemblance not unlike the interior of the stomach.

Eloir observed in a horse having died of colic, a rupture of the diaphragm and protrusion of the corresponding flexure of the colon into the thoracic cavity.

At the veterinary school in Toulouses a number of operations have been performed under the influence of cocaine. The agent is applied hypodermically in a five per cent. solution of hydrochloric acid. Minute quantities are sufficient, and from this fact the price should form no obstacle to the application of this anæsthetic.

A new shoe has been adopted by the tramways here (Germany), by whose aid more ground is traversed than with the usual shoe. This is made of Bessemer steel, and applied to the foot cold; it is maintained without the use of nails, by means of a bent hook extending half way to the coronary band. To prevent the shoe slipping when heavily loaded, there are three steel points upon the superior surface of each shoe; these penetrate the sole of the foot.

According to a communication from "Hufschmid," Prof. Schmidt reports that the metacarpus of a horse weighing one thousand pounds sustains a weight of three hundred pounds; the weight supported by the metatarsus is about one hundred pounds less. These figures are somewhat increased in horses having high knee action.

Optical Disturbance as Sequelæ of Canine Distemper.—A setter, which had passed through the various stages of distemper without exhibiting any nervous symptoms, manifested as sequence therefrom a disturbance of an optical nature which finally occasioned total blindness. The pupils were excessively dilated, but there could be detected no alteration of the cornea, or within the anterior chamber.

The fundament of the retina when examined by the ophthalmoscope was seen studded with pale yellow papillæ circumscribed by a white ring. The vessels accompanying the ramifications of the optic nerve were dark red and congested; those of the retina, on the contrary, were pale and contracted. From these observations the case was diagnosed as one of atrophy of the fifth pair, associated with congested papillæ. Injections of strychnine (0.02 grms., 5.0 aq. distillat) every third day, together with strong diet. Partial recovery followed; never completely healed.

Effect of Intense Degrees of Cold upon Animals.—Colin had twenty years previous made observations upon this subject and reported the same to the Paris society. These were opposed to the supposition that small animals parted with their

animal heat quicker than larger beasts. Rabbits showed themselves especially robust, withstanding 20° – 25° of cold between two blocks of ice ; after remaining twenty-four hours the temperature (body) fell 1.8° , while that of the extremities fell 32° F. Sheep were equally vigorous, providing the fleece be kept dry. Swine and goats, possessing but little hair, maintained their vitality in a marked degree, although they suffered more or less subsequently. Dogs also withstood these frigid atmospheres, but horses were the least able to tolerate cold. Poultry proved themselves of startling vitality in this respect when the plumage remained smooth and unruffled.

Complete Absence of One Eye in a Calf.—In a small heifer about three weeks old, killed at the public slaughter house at Gottingen, the left eyeball was totally absent, while the right member was perfectly developed in every particular. The left eyelids were of normal appearance, but the optic cavity was occupied by fat and connective tissue in which degenerated muscle fibre could be seen. In a series of transverse sections of these contents examined by the microscope, the lens could not be distinguished. The optic nerve and foramen were absent. The peculiarity of this malformation is in the fact that all epithelial formations, excluding the lids, were wanting.

Rupture of Uterus.—On a certain night of this year I was called to attend a mare that had been six hours in labor. The foal had already succumbed ; from the lips of the vulva protruded an anterior and posterior foot, and a short distance within the vagina reposed the other two limbs—the presentation was a posterior one. The presenting metacarpus was disarticulated at the carpus, and the limb retropelled in order to avoid wounding the mucous membrane of the genital passages. Five men were stationed on a rope attached to the posterior extremities, and by steady traction the mare was gradually delivered. Immediately afterward a considerable hemorrhage oozed from the commissure of the vulva. Upon

examination I found a rupture about five inches in length in the body of the uterus. After removing two blood clots, which clung to the border of the wound, the same was brought in opposition in the following manner: A curved needle threaded with carbolized catgut was introduced in each side of the rent and by dint of much patience and the consumption of about two hours' time I was enabled to bring the lips together. The uterine cavity was irrigated every two hours by a two per cent. creolin solution for a period of twenty-four hours; later the injection was made only four times in a day. During the first eight days the animal had fever and anorexia; three weeks later the patient was put to work.—*Thier. Wock.*

SOCIETY MEETINGS.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The second annual meeting of the New York State Veterinary Medical Society was held in the assembly room of the Vanderbilt House, Syracuse, N. Y., on Tuesday, January 12th, 1892.

The meeting was called to order at 10 A.M. by the President, Dr. C. D. Morris. The roll-call by the Secretary showed a very fair percentage of the members present; there were several members who came in later in the day, also members of the profession from different parts of the State who were not members of the Society.

President Morris delivered his annual address as follows:

Gentlemen and Members of the Veterinary Profession:

It is with pleasure that I meet you on this occasion, and especially am I gratified at seeing those gentlemen here who assisted so willingly and at the expense of no little energy, and who appropriated their influence and money for the establishing of this Society, and who have stood by it faithfully to the present. It must be equally as gratifying to every member as it is to myself, that the principles of the Society are well founded, that the tenor of its words and acts are for the elevation of the profession and the uplifting of the individual member, and that the functions of the Society are in perfect harmony with the members, to the end that we so much desire, the union of our energies, interests and sympathy toward that perfect ideal to contribute to the diffusion of true science, and

particularly to the knowledge of the healing art. The Society has been in existence but two years. In that short length of time it has become known throughout the profession in the State, and this acquaintance and knowledge of the Society, whether direct or indirect, has left the impression with the practitioner that the Society is marching with aggressive pace upon the ignorance and superstitious methods as annunciated by the forefathers and the empiric of the day. This may seem unnecessary, but if we progress we must reform old methods; if our science advances we must put into practice the product of our experience, and into words the evolution of conscious thought, "That men may rise on stepping stones of their dead relics to higher things." The constant endeavor of the officials connected with this Society has been to place the profession upon the high standard which it justly merits, and the efforts that have been put forth in the way of reform to some may seem arbitrary and unwarranted at this stage and history of the profession. But if the profession ever expects to enjoy the immunity, dignity and respect that our sister professions are enjoying we must commence at once ourselves, and that start must be on the lines other than those which are purely mercenary. It is too often the case that we foot the sum total of a month's work on the number of dollars made, more than on the real service rendered. Our success as practitioners does not rest so much on the fact of what we are able to enumerate as it does on our ability to prevent contagions and combat disease. We should entertain a judicious regard for success from a pecuniary standpoint, but above all possess ability and skill equal to the emergency.

It has been my privilege during the past year to visit some of the veterinarians in the State, some of whom were members of this Society, and others not members of any; and to my surprise found that many of these gentlemen were not taking a veterinary journal. Some were subscribers to one.

Gentlemen, in a spirit that is neither criticism nor reproach, this is the dearest economy that can possibly be practiced. The times demand that we stand abreast of them. No physician can practice with success who is not a reader of the current literature of his profession, and if we expect to be successful practitioners we must study the latest evolution of thought and practice. There are two excellent journals published in the United States. *The Journal of Comparative Medicine and Veterinary Archives* has been before the public a number of years. The editors are men of experience, whose labors deserve the recognition and patronage of the profession.

THE AMERICAN VETERINARY REVIEW has enjoyed a successful career. It is the veterinary journal of the United States, strictly working for the interests of the profession, having the largest circulation in the United States and abroad, published for the good of all and not the benefit of one, offering to its readers everything of professional interest in the world; and it seems to me that no man can succeed and command the respect due to the average reader and educated veterinarian who will undertake to practice without the aid of these journals. There is no position in a profession as formidable as to be able to talk intelligently. The acts of the veterinarians of to-day create the virtues of the profession for to-morrow. Therefore, gentlemen, the subject of reform is constantly upon us. Along the path of progress, through experience or legislative enact-

ment, through which all the vital needs of society are regulated, I present again a desire which I long to see consummated and which I believe every gentleman in the profession hopes for : that the standard be made higher ; that the practice of the art in the State of New York shall rise above its present environments ; that its position in the commonwealth shall be one in which the observer must look up rather than look down in order to behold. I fear there is a tendency toward retrogression, and this, it seems to me is through the medium of cheapened education. The springing up of new schools in the country is not so much on account of a demand for a greater number of institutions teaching the art, as it is to offer facilities for an easier method of obtaining a degree. The old established colleges and universities of our country are quite capable of taking care of the demand at the present time. They are in a position to offer inducements which are superior to any new school ; their experience, reputation and faculties are a sufficient guarantee of their fitness and ability. It seems to me, with these facts in view, that the tendency of this sort of education is to lower the character of the profession, and to place a class of practitioners before the public who will be holding degrees and passing as qualified men, who are yet morally but very little above, if not on a par, with the empiric of the day. This seems to demand arbitrary restrictions upon the profession to the extent requiring a thorough preparation to the end, not merely of obtaining a degree, but that the student is in possession of a thorough college training. I believe one of the most important duties of the hour is, that every lover of the profession should exert his best efforts in behalf of what the art has been able to achieve and sustain and cement his honor with its pride, that her good name shall be invulnerable as against the attack of those who do not love her virtues, and whose aims are purely mercenary. The bill which this Society has placed before the present Legislature possesses these merits. It presumes that the student coming from an institution requiring a four years' course of six months each of continuous study is thoroughly qualified, so far as lies within the power of any institution to qualify. It was not the intent of the framers of the act to strike at the heart of any of the established institutions. It was a matter of serious reflection, knowing that within the border of our State there exists one of the best schools on the American continent, many of whose alumni hold positions of professional honor and trust in the Federal Government, whose aim has been to emulate those principles and bring to the surface the product of scientific research, the best fruits and experience the profession affords to-day, their able corps of instructors, and particularly her dean, whose idea has been to reach the highest standard attainable ; and yet to exempt the graduates of this institution would seem to be class legislation, and to my mind would not only prove disastrous to the bill but to the interests of the same. I feel justified in the position I take regarding the colleges.

While I would in no way dictate matters which to them are of an individual nature, and assume in any way to know what to them are vital interests as a corporation in which I have no part, yet I do presume that should a demand arise in the profession from this State asking that the institutions teaching the art extend their curriculum to four years of six months each, with a more elaborate exhaustion of the science, it would not only be science of profit to the col-

leges, but it would establish the character of the profession upon a profound basis. Such a step would be the initiative of a broad principle resulting in a higher education of the profession. The public is demanding on every side that the status of art and science as taught in our institutions of learning be made higher.

During the last decade the higher institutions of learning have been requiring a more rigid matriculation, and establishing a thorough curriculum.

Second to the leading profession in America to-day is the medical. The products of their work show greater results toward enlightening and contributing to the happiness of the human family than any other. Our profession is an auxiliary to the medical. The confidence and respect that society has entertained toward the medical, has brought many a man from obscurity into prominence. And why not bring our profession up to that standard of proficiency? We have the intelligence and integrity, we can rise above the misnomer that prevails to a certain extent, *i. e.*, that the profession is not an elevating one, and that a young man of ability and refinement who may choose to enter it attenuates his manliness; this is a gross error and a "Moloch" sacrifice of the painstaking energy that the veterinarian of to-day has undergone in order that he might properly perform a function in a profession of such beneficence to the higher and lower animals as that of ours. But, as in all reforms that require time to educate the masses, we can entertain the pleasant fruits of hope, that in due season ours will be properly adjusted.

The year that has just closed has not been so fraught of medical excitement as the one which preceded it. Experience has been conservative.

Prophylactic and therapeutic treatment has pursued an even tenor, and has been quite as successful as in the past. The United States Department of Agriculture has prepared a special report on "The causes and prevention of Swine Plague," which is well worth your time and study. So far as I have been able to ascertain, contagious disease has not existed to any extent. The periodic and zymotic diseases which are indigenous to certain localities have not been alarming, though the death rate in the families of fashionable and standard bred horses has been greater this year than the preceding one.

Gentlemen, the labor of the second year of our Society is drawing to a close. At this time a new set of officers will be elected, to assume their duties at the close of this meeting. Knowing that your choice will be a wise one I have only to say, that from the sincerity of my heart I feel to thank the Society for the honors you have so bountifully conferred upon me, and for the willing and cordial support you have given me in all the undertakings that I have adventured in, in what I believed to be for the best interests of the Society and the profession at large. While we may differ as to methods and the expediency of certain forms, yet I think we are fully agreed that the principle is right.

And to the gentleman that shall succeed me, I wish to assure him of my confidence and support, and hope that he shall be able to achieve greater ends than I have accomplished in my humble way.

The members were greatly pleased with the able manner in which President Morris pointed out the matters of vital

importance to every lover of the profession regarding legislation, and loudly applauded him for the same.

The reading of the minutes of the last meeting was dispensed with, for want of time.

President Morris then asked for all present who were not members of the society, and wished to become members to make application to the Censors; fifteen minutes recess was given for the same.

The following applications were filed with the Censors:

R. A. McLean, D.V.S., Brooklyn; W. J. Wadsworth, V.S.; D. H. Rowe, V.S.; H. W. Skerritt, V.S.; F. Marrow, V.S.; V. L. James, V.S.; A. H. Ide, V.S.

President Morris: We will listen to report of Committee on Arrangements.

Dr. Hinkley: No report to be made.

President Morris: We will listen to report of Committee on Publication.

Dr. Hinkley, Sec'y. Have included the report in my address, which will be read later.

President Morris. I will make a short report of Committee on Legislation, being a member of that committee. There has been a bill drafted, printed and copies sent to each member of this Society and also to some members of the profession whom we know to be qualified men. Dr. Morris then explained the texture of the bill and said it would be presented to the Legislature at this session. He hoped it would be introduced on evening of January 12, 1892. He said the bill had been thoroughly discussed at the meeting in New York August 12, 1891, by all members present, including Professors Law and Liautard. He also said there was no need of a man to practice as a farrier, if he wanted to be a veterinary surgeon, as there was every opportunity offered him to qualify by graduating from a veterinary college.

Dr. H. Sutterby: I move report be received and placed on file. Motion seconded by Dr. Jno. A. Bell. Voted on, carried.

Dr. H. Sutterby: I move we pass resolution of thanks to Dr. Morris.

Dr. R. A. McLean : I amend to include legislative committee. Seconded and carried unanimously.

Dr. Morris : Committee on by-laws please report.

Dr. Hinkley : Would advise revision of by-laws, to be reported at next meeting. Would also advise that a committee on by-laws be appointed ; all members of this committee be residents of same county, or portion of the State, that they may be able to meet and act at any time without being obliged to travel a long distance.

Dr. R. A. McLean : I think an applicant for membership should be made acquainted with the by-laws before paying fees and dues, as called for in Sec. 8.

President Morris : Will the Secretary please read his report. The Secretary submitted the following :

Mr. President and Gentlemen :

The past year of 1891, I am pleased to tell you, has been one of prosperity, success and encouragement to every qualified veterinary surgeon in the State of New York, and especially to the members of this Society.

We meet again to-day with new life, new blood, and strong reinforcements to our ranks of the best and most active workers in the veterinary profession.

Veterinarians in the past have been somewhat averse to becoming members, or co-workers in any society pertaining to veterinary science, because through some hook or crook the non-qualified or quack would creep in, one by one, until they were in the majority, with always the same result: Oil and water, acid and alkali, will not mix without considerable effervescence, and the same can be said of the qualified and the quack. And usually the society has become extinct.

When this Society was first organized only two years ago in the city of Rochester, a mere handful of men, twenty-seven in all, from all parts of the State, were present. We were few in number, but earnest in our cause and willing to work and wait for our aims and ambitious desires for the better protection of the qualified veterinary surgeons of the Empire State, and have a line of demarcation between the graduated surgeon and the charlatan.

To-day we have fifty-seven members in good standing, who are active and persevering in this good work, and numerous more who are knocking at our door for entrance, who are sincere in their workings for the profession.

Surely you will agree with me when I say that this is a sure sign of prosperity, and of a healthy and successful society.

Should the present ratio of new members continue during the next five years you will have a membership roll of nearly five hundred members. Why should we not feel proud of this, the Empire State of the Union ?

Will our brothers in the profession not compete with any in the United States, either in ability or professional learning ?

We have two colleges and a chair in veterinary surgery that will compare with any, either American or foreign. When we have the hearty co-operation of such hard and earnest workers in the science as Professors Law and Liautard, and numerous others who are growing up in the profession, with all the advantages of society, education and proper training, with the quick blood of youth coursing through their veins, willing to work and labor for the good cause, why should we not feel encouraged when we stop to think that upon the shoulders of these very same men will be placed the great responsibility of moulding and guiding the future of our veterinary structure in America. We should feel doubly pleased to see that our Government has already in national sanitary work commenced to feel the want of better veterinary inspection of our meats and live stock, to not only place us on an equal footing with our sister countries, but, American like, to be at the head. We should aim to be placed at the head of all nations as the foremost sanitary protector of food and food products.

Sanitation in its broad and important meaning should receive careful and thoughtful consideration on our part, that public sentiment may be aroused and give us our proper place as sanitarians.

In veterinary jurisprudence let us hope that the time is not far distant when our now almost useless and inferior laws may be cast aside and more broad and fair statutes take their place, and remove from our respected profession the very unjust criticism that make us the laughing-stock of some of our patrons. The rapid and advanced strides that our country has taken during the last four years in the breeding of fine and blooded stock, should stimulate us to making ourselves close students of breeding in all its many conditions. Veterinary education in this, we should all agree, and make the effort of our life to reach the standard of our schools, and to watch their welfare and prosperity with a zealous eye, and to lend our aid to widen and improve their standard of education.

Our veterinary journals, I must admit, are few in number, but we can feel proud of what we have got as being edited and conducted and published by a few of the most learned, scientific and self-sacrificing men that the veterinary profession can boast of. And I for one would feel like going without one of my daily meals rather than to be deprived of the valuable information and opinions expressed in an American veterinary journal.

Gentlemen, in my official capacity as Secretary to your Society during the past two years, I have had every opportunity to become acquainted with many veterinarians in New York State, if not in person, through correspondence, and it gives me great pleasure to state that, although many in number and scattered in location, all seem to feel the necessity of banding together for our mutual protection, and the protection of the suffering public; I find that in our crude and hurried construction of our by-laws there is considerable room for improvement, and would suggest that the same be carefully considered at this meeting and revised as the committee may decide. The same may be said of the Code of Ethics. I would also suggest that our President, in naming his several committees, have the members of a committee selected from a location near each other, that they may meet oftener without having to travel from home, as heretofore committees have been on paper only, as one man was at the eastern part of the State and another at the extreme west part, making it almost impos-

sible for them to meet except by correspondence. This, in my opinion, is detrimental to the interests of the Society, and I trust the President will respectfully ask all such committees to accept the office and to fulfil every obligation, remembering we must all do our share in this great work ahead of us to warrant us success in any part.

As to our financial condition you are all aware by the several letters sent out that I have endeavored to keep all dues and expenses of the Society paid up, as we are young in age, and in starting all societies there is considerable expense attached, which if all members respond promptly makes it more easy and pleasant for all concerned.

I have endeavored by printed matter and by personal correspondence to keep a lively interest with all members and to try and get all to become personally interested in the workings of the Society.

I have compiled for your use a list of nearly all the graduates in veterinary medicine and surgery in New York State, numbering about three hundred, and I hope my successor will continue to add from year to year new names, so as to have on hand a reliable directory.

Following in the footsteps of our parent organization, the United States Veterinary Medical Association, no members of the profession can become one of our members without first filling out a blank application, and he must be vouched for by two of our members and show his qualifications, filling out and signing a blank certificate, showing his willingness to obey and abide by our by-laws and constitution.

I also suggest that we have the much needed Comitia Minora appointed by our President, and to further the interest of our Society that the President appoint County Secretaries in each county; when we have a Secretary in a county he to report at our annual meeting the condition of the veterinary profession in county, also any special disease or outbreak or anything of importance to our profession, thereby assuring us of a complete report of all that transpires in the several counties.

During the last year I have received and answered nearly three hundred letters; I have sent out four hundred and fifty invitations, four hundred and fifty programmes, four hundred circulars, nearly one hundred postal cards, eighteen telegrams, and have written nearly two hundred and fifty personal letters to try and interest all qualified members of our profession in our work, and have sent out five hundred of our proposed act to regulate veterinary practice in this State. I attended the meeting of the United States Veterinary Medical Association and felt richly rewarded, for there I met the first organization of the veterinary profession in America, and the numerous papers that were read and the discussions which followed brought forth many new ideas and showed the good work of this grand Society. I would most heartily and sincerely ask that all our members make application for membership in the United States Veterinary Medical Association, as we should all feel proud of its good work and lend it our personal aid and encouragement. Before closing my report I would like to add that the office I now occupy is, and will continue to be, one of great expenditure of time and labor, and as I have served you faithfully and earnestly in this capacity for two years, no inducement you could bring

forth would prevail upon me to accept a re-election. I therefore respectfully ask that you will choose from among your members one who will become as much interested and wrapped up in the duties of the office as I have been, and continue to make more complete the work I have commenced. I would therefore recommend that some compensation be allowed my successor. I now thank you all very kindly for your personal aid in my labors, and especially to the officers of this Society do I feel grateful for their generous support. I have here my vouchers for expenses during the past year and respectfully submit my report.

N. P. HINKLEY, D.V.S., *Secretary*.

The report of the Secretary being accepted, a lively discussion took place on the granting of a salary to the Secretary, on the duties of the Comitia Minora, and on milk inspection.

The election of officers then followed with the following result :

President, Dr. R. S. Huidekoper ; Vice-President, Dr. John Wende ; Secretary, Dr. Hinckley ; and Treasurer, Dr. H. Sutterby.

After the reading of a copy of the act presented to the Legislature and some remarks from the President, the meeting adjourned for supper.

Being again called to order at 7:45, President Morris called on Dr. Jas. Carnrite to read his paper.*

A discussion on Dr. Carnrite's paper followed, in which all members took an active part.

President Morris called on Dr. Jas. M. Chase to read his paper.*

All members were deeply interested in discussing Dr. Chase's paper.

Dr. Morris read a synopsis of his experience and the gratifying results obtained from the use of pyoktanine in his practice.

Dr. Morris resumed the chair.

Dr. McLean: Where will next meeting be held?

Dr. Morris: At Syracuse, between July 5th and 15th, 1892.

Dr. Hinkley made a few well chosen remarks, highly

* Published in this issue.

complimenting Dr. C. D. Morris on his success in starting the New York State Veterinary Medical Society, and the ability he had displayed in the manner in which he had filled the office of President, and moved that Dr. Morris be given a vote of thanks for his able services.

Motion seconded by Dr. H. Sutterby, and carried unanimously.

After some business referred to the Comitia Minora, and after a few remarks by the President, Secretary, and other members of the Society, a motion was made and seconded to adjourn until the next semi-annual meeting, subject to the call of Secretary.

N. P. HINKLEY, D.V.S.,
Secretary.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The ninth annual meeting of the Ohio State Veterinary Medical Association was held in Well Post Hall (G. A. R.), Columbus, Ohio, January 13th, 1892.

The President, Dr. W. R. Howe, occupied the chair, and called the meeting to order at 2 P.M.

After roll-call, the reading of minutes of last meeting, the electing of officers for the present year was in order, which was formally declared to be as follows: President, Dr. W. E. Wight; First Vice-President, Dr. W. F. Derr; Second Vice-President, Dr. J. D. Fair; Third Vice-President, Dr. W. J. Torrence; Secretary, Dr. W. H. Gribble; Treasurer, Dr. T. B. Hillock.

The President then made a few very appropriate remarks, touching most particularly on standing by our Code of Ethics, the progress of veterinary colleges, and the peculiar construction of our present State Board of Live Stock Commissioners.

The following gentlemen were proposed for membership, and each declared duly elected: Dr. J. D. Fair proposed Dr. H. M. Ball (Amer. 1888), Columbus, vouched for by Drs. J. D. Hillock and W. F. Derr. Dr. J. D. Hillock proposed Dr. L. W. Carl (Ont. 1891), Columbus, vouched for by Drs. W. Shaw and J. M. Waddell. Each new member was introduced and responded in a few well chosen-remarks.

Communications were read from Prof. Huidekoper and Drs. Kent, Elliot, Newton, Carter, Hoskins and others.

Dr. G. W. Butler read a paper which consisted of records of a number of interesting cases, all due to some form of internal parasites, one case in particular in which at post-mortem he removed fifteen tenia and thousands of strongyli.

These cases elicited considerable discussion, and showed the fact that many cases of a doubtful nature may be caused by these pests; symptoms of almost any trouble being manifested, and in many cases in which worms were not suspected, at post-mortem these were shown to be the cause.

Dr. E. H. Shepherd reported a case where the posterior extremities swelled very rapidly without apparent cause, until the animal could scarcely move; his hind limbs spread so far apart that a barrel could be rolled between his feet. The swelling was not like purpura; there were no petecial spots on mucous membrane. He did not think it possible to be purpura, as there was no similarity; all of a sudden the swelling left the limbs, and he thought his case was better, when the head began to swell, and in two hours from when noticed could not put his nose in a common bucket—died.

Dr. Torrence had had cases of that kind, and considered them purpura; did not think it necessary to have petecial spots in nostrils, but post-mortem in such cases had revealed hemorrhagic trouble in intestines.

A great diversity of treatment for purpura was developed during the remarks, some being diametrically opposite to others.

A recess was now taken, and the Chair appointed Drs. Butler and Shepherd a committee to audit the books of the Secretary and Treasurer. Upon reassembling the committee reported everything correct, with a balance in hands of Treasurer of \$303.99, and in Secretary's hands of \$31—total, \$334.99.

Moved by Dr. Shaw and supported by Dr. Bretz that the report be accepted. Carried.

Dr. E. H. Shepherd now read an essay on equine dentistry, and showed several fine specimens, one molar from a five-year-old mare being over five inches long. The best speci-

men was a whole head, showing seven molars in left lower jaw, extra one being posterior, and which, having no opposition had elongated until it had worn its way and passed through the sup. maxilla into the maxillary sinus, then on into the nasal cavity. What suffering must this poor animal have undergone, as she did not die until twenty years of age. It was the universal opinion of all present that veterinary colleges should teach veterinary dentistry, none doing so (it was claimed) except the Chicago College, and that comparatively very few veterinary surgeons knew the first principles of dentistry.

Adjourned until 7.30 P.M.

EVENING SESSION.

Meeting called to order at 7.30 P. M. by First Vice-President Dr. Shepherd, President Howe being absent.

Dr. J. D. Fair now read a report of several interesting cases of distokia and inversion of rectum, reporting one case we had not seen a record of, viz.: distokia due to head passing into rectum and out through anus, with front feet out of vulva. Quite an interesting discussion followed, describing the various methods of assistance in cases of distokia, all condemning the use of excessive traction in delivery of mares.

The chair now called for the report of Committee on Veterinary Progress, which was rendered by Dr. Cotton, chairman of the committee. He began his report with a history of early knowledge of the effect of mind upon matter, giving us the Bible story of Jacob and Laban, where means were adopted to cause animals to bring forth streaked or striped young, which according to the story was successful. Most of us had heard or read of this story before, but had evidently forgotten it. He then launched out in a description of the birth and growth of veterinary colleges and veterinary literature, giving Prof. Chauveau a glowing tribute of respect in regard to his work on comparative anatomy, saying that up to the present time no work of its kind was its equal.

He claimed that the Talmud nearly two thousand years ago recognized tuberculosis as due to a bacilli, and influenza and other diseases to be due to a germ, and in view of these

facts he did not think, considering the difference in dates, that medicine had made an exceptionally healthy progress. The speaker, becoming eloquent, gave his opinion of different State colleges and universities, with only one professor on veterinary subjects connected with them, yet graduating veterinary surgeons; he thought that students so taught did not develop their brain power in behalf of their profession, but their minds became simply storage places for the professor's prescriptions, and when sent into actual practice the chances were they would not show an individualism, but treat according to set rule; in other words, become the professor by proxy. He asked, is there no way to prevent this; if there is not, let us all, each and every one, make it a duty to show to students contemplating such a course the fallacy of the matter, and the real need of a veterinary education, taught by a full corps of competent professors.

The speaker regretted the want of harmony as exhibited by evidence in the actinomykosis cases at Peoria, where men of high governmental standing tacitly admitted the disease caused unwholesome meat, by rejecting it for export, still allowing it to be used when decapitated; and men of high professional standing claiming its wholesomeness, when he thought that not one of them would eat a piece of such animals if they knew it. Oh, consistency, thou art a jewel!

A lengthy discussion followed the reading of this report it being principally directed towards the germ of hog cholera in its different phases, as shown by the writings of Drs. Salmon, Billings, Ditmars, etc., all regretting the want of harmony among these men in their professional labors.

Dr. W. H. Gribble next read a paper on "The Disposal of the Dead Viewed in the Light of Modern Science." The writer by extracts, etc., showed the different methods of disposal of dead bodies, with a comparison of their virtues, etc., all especially directed towards the facts from a sanitary point of view, to make the world healthier for the living. The discussion brought out the fact that many in the room were in favor of cremation, but the "better half" of the family would not permit it.

Dr. Cotton stated he was a subscriber to a crematory, and at death was to be cremated.

Moved by Dr. Torrence and supported by Dr. Wight that as this (as far as they knew) was the first paper from a veterinary surgeon advocating cremation, the same be printed in one of the State newspapers. Objected to by Dr. Gribble and the motion withdrawn.

A communication was read from Drs. Newton and Carter, of Toledo, stating that as they were about to engage in a business not strictly professional and at variance with the code of ethics, they desired to withdraw. On motion the request was granted.

Complaint was made that Dr. W. C. Fair, of Cleveland, was using his name and influence in publicly advertising a secret remedy known as caustic balsam. Moved and duly supported that the Secretary notify Dr. Fair to be present at our next meeting, and show cause (if the complaint be true) why he should not be expelled from membership in the Association.

It was moved, seconded and unanimously carried that the Secretary incorporate in the minutes and call the attention of the *American Veterinary Review* and *The Journal of Comparative Medicine* to the fact of unprofessional advertisements of proprietary medicines, as spelterine, creolin, sanitas preparations, etc., and that such ought to be discontinued.

The Secretary was instructed to correspond with the Secretaries of the Indiana and Michigan Associations, and arrange if possible for a joint summer meeting.

Dr. W. H. Gribble read the following :

LANCASTER, OHIO.—J. B. Hillock, V.S., died July 26, 1891. Dr. Hillock was a member of this Association from its origin, and always took an active interest in its welfare. His death was exceptionally sad, from the fact that it was unexpected, and brought about in the course of his professional duties, he dying of acute septicæmia. On Tuesday, July 21, in holding a post-mortem on an animal that died of pneumonia, he slightly cut the knuckle of the second finger of his right hand. It was a very slight injury, no attention whatever being paid to it

until Thursday, when it began to cause him some trouble, but as yet not sufficient as to regard it at all serious. Meeting his physician he consulted him, who advised treatment, which was followed, while attending to his daily practice, which he continued to do up to Saturday evening, leaving his office for home as late as 9 P. M. He did not complain, and rested fairly well during the night, and Sunday morning, although not feeling very well, he concluded to attend church. At this time his physician passing, called in, and advised him not to go. In a short time he rapidly grew worse, having slight convulsions and heart failure, becoming unconscious about noon, and remaining so until his death, which occurred at 7:45 P. M.

The Chair appointed Drs. Fair, Colton and Wight to draft resolutions in memoriam. They submitted the following:

WHEREAS, In the prime of life and in the course of duty death has removed our colleague and associate, Dr. J. B. Hillock; and

Whereas, Our professional and business relations were at all times pleasant; therefore

Resolved, That in his death we mourn the loss of a friend and member of our profession and Association, and one who has merited our highest respect and esteem; and

Resolved, That our heartfelt sympathy be extended to his family and friends, with the hope that even so great a loss may be the harbinger of greater good; and

Resolved, That copies of these resolutions be sent to his family and to the veterinary journals and also spread upon the minutes of this Association.

J. D. FAIR,
T. BENT COTTON, } *Committee.*
W. E. WIGHT,

Moved, duly supported and carried that the report be accepted.

After the reading of the Secretary's report the meeting adjourned, to meet upon the call of the Secretary, at such time and place as he may deem best, after corresponding with the Secretaries of the Indiana and Michigan State Associations.

WM. H. GRIBBLE, D.V.S., *Secretary.*

NORTHEASTERN IOWA VETERINARY MEDICAL ASSOCIATION.

The second meeting of the Northeastern Iowa Veterinary Medical Association was called to order by President Scott in the parlors of the Turner House, Independence, Ia., Jan. 14, 1892.

After roll-call the minutes of the previous meeting were read and approved.

Letters of regret were read from Drs. J. W. Brown, V.S., Oskaloosa; John Tillie, D.V.M., Muscatine; J. E. King, V.S., Anamosa; and W. B. Niles, D.V.M., Ames.

The applications of Drs. Wm. Drinkwater, V.S., Monticello, A. S. Barnes, V.S., Maquoketa, and A. L. Brodie, V.S., Cedar Falls, were reported upon favorably by the Board of Censors and they were elected members.

The subjects: chronic cough; acute anemia; influenza; obstetrical operations, and actinomycosis were discussed at length. The discussion on actinomycosis was particularly interesting; all the members expressing their firm belief in the infectious nature of the disease and that animals so afflicted are unfit for human food, and are a source of danger in regard to other animals with which they may come in contact; that it behooves us as veterinarians and preservers of the public health to discountenance the removal of actinomycotic tumors, thereby obliterating a valuable means of diagnosis, and also enabling the owner of such animals to dispose of them to unsuspecting parties.

Cases were cited of stockmen who make it a business of buying such animals at low prices and employing a veterinarian to remove the tumor, afterwards shipping same animals to Chicago (where they sell as first-rate steers) or sell them to local butchers. All of the above cases were proved to be actinomycotic tumors by a microscopic examination.

Dr. Brodie reported some very mysterious cases occurring in horses simulating diphtheria, owing to the formation of false membranes in the bronchial tubes (some of which membranes he exhibited). The President took charge of the specimen, promising to have it examined by an expert microscopist and report the result at next meeting.

A petition to change the name of the Association from "Northeastern" to "Eastern" Iowa Veterinary Medical Association was laid on the table, to be acted upon at the next meeting.

The Association then adjourned to meet in Cedar Rapids, March 21, 1892.

J. T. KENNEDY,
Secretary.

WESTERN IOWA VETERINARY MEDICAL ASSOCIATION.

The fourth meeting of the Western Iowa Veterinary Medical Association was held at Carroll, Iowa, January 20, 1892. Meeting called to order by the President, S. H. Johnston. Upon roll-call the following members were present: S. H. Johnston, G. A. Johnson and G. C. Williams, with Dr. L. U. Shipley as a visitor.

The minutes of the previous meeting was read by the Secretary and approved.

Communication and letters of regret were received from several members, also an invitation from Dr. W. C. McClanahan to the members of the Association to forward to the Veterinary Department of the Iowa Agricultural College all pathological specimens which it was desired to have investigated. The invitation was accepted and placed on file.

The delegate to the Iowa State Veterinary Medical Association reported that he had secured the adoption by that Association of a bill for legislation in accordance with the wishes of the members of this Association, as expressed at the meeting held on October 21st; also the adoption of a service fee bill. Dr. L. U. Shipley was admitted to membership, after which a general discussion was indulged in.

Among other things, Dr. S. H. Johnston recommended the use of acetanilid in tympanitis.

Dr. Shipley presented a report of cases, namely: pericarditis, posterior displacement of the cœcum and prolapsus of the rectum, which were fully discussed.

Dr. S. H. Johnston read a paper on odontomes in cattle. The Doctor advanced the idea that many so-called cases of lumpy jaw were in reality nothing but odontomes.

Next on the programme was the election of officers, which resulted as followed: President, G. I. Gibson; Vice-President, G. C. Williams; Secretary and Treasurer, L. U. Shipley.

The meeting then adjourned to meet at Carroll at the call of the Secretary.

L. U. SHIPLEY, *Secretary*.

WESTERN PENNSYLVANIA VETERINARY MEDICAL ASSOCIATION.

A number of visitors and members of the above named Association met at Dr. Jas. C. McNeil's infirmary, Saturday, January 23rd, 1892.

Dr. McNeil presented a very interesting and original paper on "Osteoporosis." A rising vote of thanks was extended to the essayist.

David Martin, V.S., of McKeesport, and N. Recktenwald, V.S., of South Side, were elected associate members.

H. S. Richards, V.S., will read a paper before the next meeting.

The subject of horse-shoers and other non-professional and non-registered persons practicing veterinary medicine and surgery in this vicinity, contrary to law, was duly considered and final action will be taken at an early date.

JAMES A. WAUGH, V.S., *Secretary*.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, January 27th, 1892, at 7:30 P.M. President Dr. L. H. Howard in the chair.

Members present: Drs. Bryden, Blackwood, Becket, Burr, Emerson, Hadcock, Harrington, Howard, Marshall, Osgood, Winchester, and the Secretary. Honorary member: Dr. Stickney. Guests: Mr. W. P. A. Willard, President of the Live Stock Security Insurance Company; Dr. G. H. Bailey, of Portland, Maine, Veterinarian of the Maine State Board of Cattle Commissioners; Dr. Choate, of Portsmouth, N. H., and Mr. John McNab, of Scotland.

Records of the last meeting read and accepted.

A discussion took place as to the advisability of inducing the Comitia Minora of the United States Veterinary Medical Association to have the next meeting of that Association in Boston. Dr. Marshall was in favor of its being in Boston. Dr. G. H. Bailey, of Maine, thought Boston was the most convenient place for the Down-Easters to come to. Dr. Choate, of Portsmouth, thought Boston more agreeable for the New Hampshire veterinarians than any other place.

Moved by Mr. Emerson: That the two members of the Comitia Minora from the Massachusetts Veterinary Association, Drs. Stickney and Winchester, be instructed to use their influence to bring the meeting to Boston. Seconded by Dr. Blackwood. Carried.

Names of W. A. Hitchcock, M.D.V., and J. M. Parker, D.V.S., were voted upon for membership. Eight ballots were cast for each, all in the affirmative.

Dr. J. B. Paige, of Amherst, sent his application and credentials for membership, upon which the Executive Committee reported favorably. Laid on the table to be balloted upon at the next meeting.

Letters were received from Drs. W. M. Simpson and E. P. McKenna relative to membership, which the Secretary was directed to answer at his discretion.

Mr. W. P. A. Willard, President of the Live Stock Security Insurance Company, addressed the Association upon the work the Company is engaged in, and its dependence upon qualified veterinarians for the success of the medical side of its business. The business is conducted on strict business principles, and he realized that they must employ only educated men to examine into the risks they take. He knows that the matter of live stock insurance has not always met with the sanction and approval of our Association, on account of the class of men that have been employed by other companies. His company is not occupying any position antagonistic to us, but recognizes our value and assistance. He has done away with "free veterinary service" since taking charge of the business. His new relations of contact with the educated

veterinarians of Massachusetts have been very pleasant. He would be much pleased to have any of us call at the Company's office, 53 State Street, and hopes to enlist our encouragement and assistance.

The Secretary informed the Association that Dr. D. D. Lee, in behalf of himself and his colleagues, Drs. Becket and Wilbert Soule, offered it the privilege of holding its meetings rent free at their new hospital, "The Boston Veterinary Hospital," on Albany St.

After discussing the matter, it was finally moved by Dr. Winchester that Dr. Lee's kind offer be laid on the table, and that he be given a vote of thanks. Seconded by Dr. Haddock. Carried.

The Cattle Commissioners and their annual report, just issued, then came up for discussion. After a long and heated debate, and much adverse criticism of the Cattle Commissioners and their doings by nearly every one present except Dr. Bryden, who rather sustained them, Dr. Marshall moved that the Chair appoint a committee of three to report to the Governor in behalf of the Association upon the Massachusetts Cattle Commission. Seconded by Dr. Becket.

Dr. Osgood moved to amend Dr. Marshall's motion, by having the committee balloted for. Seconded by Dr. Haddock. Dr. Marshall accepted the amendment. Carried. Ballot resulted in eight votes for Dr. Bryden, six for Dr. Osgood, seven for Dr. Howard, four for Dr. Winchester, and two each for Drs. Becket, Blackwood, Burr and Peters. Drs. Bryden, Osgood and Howard were therefore declared elected.

Dr. Winchester reported that the cow, whose uterus and vagina he reported at the last meeting as having amputated, had made a complete recovery.

AUSTIN PETERS, *Secretary*.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The special meeting of the Comitia Minora convened at the "Arena," 41 W. Thirty-first street, Saturday evening, Feb. 20, 1892.

Members present—Drs. Huidekoper, Robertson, Liautard, Hoskins, T. B. Rayner, R. A. McLean, Wm. Dougherty and Winchester. Absent—Drs. Williams, Stickney, and Schwartzkopff. By appointment of chair, to fill vacancies—Drs. Miller and Clement.

Communications relative to the meeting of 1892 were read, advocating Columbus, Pittsburg, Buffalo, Philadelphia and Boston. After a long and thorough discussion, a motion to meet in Buffalo was lost by a vote of 5 to 4.

A motion was then made to meet in Boston, and carried unanimously.

A motion to hold a three days' or longer session, was then adopted.

A motion was adopted for the appointment of a committee of three to act in conjunction with the Eastern local committee, to complete the necessary arrangements.

After considerable discussion a motion prevailed that we do not, as an Association, have a display at Chicago.

The consideration of the international meeting in 1893 elicited a wide discussion, and was followed by the adoption of the motion that a committee of nine be appointed, the President to act as chairman, to prepare and issue invitations to foreign schools and societies to send delegates and to arrange for their ideal reception and entertainment; this committee to have power to make such expenditures as they deem necessary on behalf of the Association.

A special report of the Chairman of Committee on Army Legislation was received through Dr. Miller, and the action of the committee in supporting the present bill before Congress was indorsed by the Comitia Minora.

Some other routine business and communications were disposed of, and the committee then adjourned.

W. HORACE HOSKINS, *Secretary*.

R. S. HUIDEKOPER, *President*.

ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

The annual banquet of the Alumni Association will be held with the coming graduating class at N. Clark's, No. 22

W. Twenty-third street, N. Y. City, on Thursday evening, March 24th, 1892, at 10:30 P. M., after the commencement exercises.

Tickets, \$5 ; to be obtained from the Secretary.

All who anticipate attending will please notify the Secretary, so that he may know how many covers to guarantee. Please do not fail to let us know your intentions.

Annual meeting to be held in the College building at 11 A. M. of same day.

DR. E. B. ACKERMAN, *Secretary*,
141 W. Fifty-fourth St., N. Y. City.

BIBLIOGRAPHY.

THE INTERNAL PARASITES OF THE HORSE. By T. F. DUNCAN, M.D., C.N., V.S. Toronto: Presbyterian News Co. New York: Sabiston & Murray,

In the present condition of English veterinary literature, any addition, however small, must be welcomed by those for whose benefit it has been written. And this applies quite aptly to the concise little work of Dr. Duncan ; it is, indeed, too concise and too little, but will nevertheless supply a want much felt by veterinary students. This is, we believe, Dr. Duncan's first attempt in the field of veterinary literature, and we think he cannot stop at this point. We hope, therefore, that at an early date we may be enabled to call the attention of our readers to a successor to this little book, which, however, in any case must prove of great interest to veterinary students.

NEW PRACTICAL DICTIONARY OF VETERINARY MEDICINE, SURGERY AND HYGIENE. (Nouveau Dictionnaire Pratique de Medecine, de Chireorgie et d'Hygiene Veterinaire). Begun by H. Bouley and continued by Professors A. Sanson, L. Trasbot and Ed. Nocard. Asselin & Houzeau.

In this twentieth volume many interesting subjects are treated by some of the highest authorities in France. Among these are: Salivary Glands, by Professors Moussu and Trasbot ; Sarcoma, by Trasbot ; Seams of the Foot, by Pellerin ;

Stomatitis, by Cadeac ; and various articles on Surgery, Materia Medica and Zootechny, by Nocard, Peuch, Kaufmann, Sanson and others.

TREATISE ON VETERINARY THERAPEUTICS AND MATERIA MEDICA. (*Traite de Therapeutique et de Matiere Medicale Veterinaires*).
By Professor M. Kaufmann. Asselin & Houzeau.

An extensive and exhaustive work, covering the subjects of therapeutics and materia medica in the most complete manner, and introducing to the veterinarian the most recent discoveries and their therapeutical applications in veterinary medicine.

Certain generalities relating to the absorption, administration, elimination, choice and physiological effects of drugs are followed by a comparatively simple classification of the drugs themselves, alphabetically arranged, covering the entire range of therapeutic agents, under twelve principal heads, having reference to their medical properties.

The whole forms a volume of 700 pages of well written, readable matter, brought out in their usual style by the old French veterinary publishing house of Asselin & Houzeau.

OBITUARY.

ROBERT WOOD, V.S.

It is our sorrowful duty to inform our readers of the death of an esteemed and regretted member of the veterinary fraternity, Robert Wood, V.S., of Lowell, Mass., which occurred in the latter part of January.

Born in England in 1820, Dr. Wood claimed, we believe, to be a graduate of the old Dadd's Veterinary College, and was a good self-made practitioner. He was one of the former members of the United States Veterinary Medical Association, and for years was one of the most regular attendants at the meetings.

IN MEMORIAM.

At a meeting of the Connecticut Veterinary Medical Association, held Tuesday, December 1, 1891, the following preamble and resolutions were introduced by Dr. Thomas Bland, of Waterbury, and unanimously passed:

WHEREAS, death, the great, the common fate of all, which spares neither high nor low, strong nor weak, learned nor simple, rich nor poor, young nor old, has called our brother, our associate, our friend, Dr. George Bridges, to rest from his life and to lay down the cares, the burdens, the struggles, and triumphs of earth; therefore,

Resolved; By the Connecticut Veterinary Medical Association, that in the sad death of Dr. Bridges this Association has lost a valued member, his profession an earnest worker, his associates a true-hearted and ardent friend. Thoroughly a master of his profession, he brought to it all his rare powers of judgment, aided and matured by experience. His wide practice required marked ability, consummate tact, and a knowledge of the various branches of his profession at once thorough and complete. Yet, as a practitioner, he was ever equal to these demands, and as a scholar in veterinary medicine he was exact and learned. It follows that he obtained readily and held easily a rank among the foremost of our honorable and humane fraternity. Why, then, should we not even in our sadness, delight to honor him in fitting eulogy. Aside from his marked professional abilities, Dr. Bridges had within himself that "touch of nature which makes all men kin." He was an honest, kind, genial, good-hearted and chivalric gentleman. There were no narrow by-ways, crooked lanes, or dark alleys in his life. Socially, he was the best and of the best. He scorned an unworthy even as he honored a noble act. How small the proportion of mankind of whom this much can truthfully be said. Despising shams, whether in the profession or out of it, Dr. Bridges had a rugged manhood peculiarly his own, a real nobility of character, by Nature's patent given him, one far higher and more enduring

than any which the potentates and princes of this earth can bestow. He was indeed one of Nature's noblemen, and to that high stature his whole life was squared.

"Take him for all in all,
Ne'er shall we look upon his like again."

Resolved; That this imperfect preamble and its accompanying resolutions be spread at length upon the records of this Association, and a copy thereof transmitted to the wife and daughter of our dead brother and friend, which we beg them to accept as a token of the esteem wherewith we hold the husband and the father, whose memory, in many acts of kindness, deeds of worth and manliness of character, we shall, each and every one of us, remember never to forget.

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